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THE ASIATIC CHOLERA EPIDEMIC OF 1833 IN MEXICO

C. A. HUTCHINSON

The first and perhaps the only attempt to write a history of the Mexican cholera epidemic of 1833 was made by Carlos María Bustamante, a contemporary prominent in political and literary circles in Mexico since the war for independence, and an indefatigable chronicler of the events of his time. He composed his history of the epidemic from the daily notations made in his diary and, since he lived in Mexico City, his account mostly concerns the situation there.[1] Bustamante was farsighted enough to realize that although the epidemic of 1833 was the first attack of Asiatic cholera that Mexico had suffered, it probably would not be the last—as indeed it was not—and he mentions that he prepared his history with the thought that it might be useful to physicians in future epidemics.[2] Another of Bustamante's objectives seems to have been to discredit the government of Mexico, then in the ill-assorted hands of President Antonio López

[1] Carlos María Bustamante, "Historia del cholera morbus en México," Bancroft Library, University of California, Berkeley, California, (cited hereinafter as Cholera MS.). Bustamante published this study, with corrections, under the general title: *Efemérides histórico-político-literarias de México*, número 2 (Mexico, 1835). For a biography of Bustamante *see*: Victoriano Salado Alvarez, *La vida azarosa y romántica de Carlos María Bustamante* (Madrid, 1933). The author gratefully acknowledges the assistance of the University of Virginia Institute for Research in the Social Sciences and the Research Committee of the University of Virginia in preparing this article.

[2] Cholera MS., p. 261. The "Historia" begins on page 235 of the MS. There are occasional references to earlier attacks of cholera in Mexico (such as in Enrique

de Santa Anna, an ambitious and unscrupulous military man, and Vice-President Valentín Gómez Farías, a physician from Guadalajara who, like a good many other Mexican doctors, found his way into politics. Farías worked energetically for social reforms which he thought could best be achieved under the federal constitution adopted in 1824. Santa Anna was also a Federalist in 1833, but his notorious opportunism soon made him join his former opponents and become a Centralist, in favor of a consolidated form of government centered in Mexico City.[3]

Interest in the cholera epidemic of 1833 seems to have been gradually diminishing with the passage of time, perhaps because of the equally gradual increase in medical knowledge concerning the cause, prevention, and cure of the disease. Yet if it is no longer of vital scientific importance to learn how the doctors in Mexico dealt with cholera in 1833, it is nonetheless of interest to consider the impact of an epidemic of the proportions of this one on the society of the day in Mexico. It will be the objective of these pages not only to describe the chronological and geographical course of the epidemic, but also to consider the reactions of contemporaries to it. It inspired doctors to write large numbers of pamphlets on the medical aspects of cholera, and it also made them observe more closely the appalling slum conditions in which the masses lived, conditions which they realized were the breeding grounds of the disease. It may be conjectured that in Mexico, as in other countries, the epidemic started a movement that later developed into the modern medical science of public health, and that it also turned men's attentions more forcibly to the plight of the poverty-stricken masses in the country.[4]

The year 1833 was a bad one for Mexico, not only because of the cholera epidemic, but also because of the bitter civil war that broke out soon after the Santa Anna-Farías government came to power. The epidemic slowed down the fighting, but it caused far more deaths than the civil war. Such was the terror it inspired in some contemporaries that it

Arreguín, Jr., "Documentos importantes para la historia de la medicina en México," *Revista de la Sociedad Mexicana de Historia Natural*, 1942, *3*: 169-170) but there does not appear to be any evidence to support them. There are reports of cholera epidemics in Mexico in 1849-1850, 1853-1854, 1857, 1866, 1872, 1882, 1903.

[3] For biographies of Gómez Farías and Santa Anna *see*: Vicente Fuentes Díaz, *Gómez Farías, padre de la reforma* (Mexico, 1948); C. A. Hutchinson, "Valentín Gómez Farías. A Biographical Study," Ph. D. Diss., Univ. of Texas, 1948; Wilfrid Hardy Callcott, *Santa Anna. The Story of an Enigma Who Once Was Mexico* (Norman, 1936).

[4] Richard Harrison Shryock, *The Development of Modern Medicine* (New York, 1947), p. 221.

eclipsed in their minds the turbulence of the political scene. "What left an indelible impression on my mind," wrote Guillermo Prieto, later a well-known man of letters and political figure, "was the terrible invasion of cholera that year. The silent, deserted streets with the sound of hurried footsteps in the distance of someone running for help. The yellow, black, and white flags that showed the presence of the disease, the doctors, priests, and houses of charity, the pharmacies crowded with people, the churches with their doors wide open and their altars covered with a thousand lights, people kneeling down with their arms forming a cross and weeping. . . . And far off in the distance the dismal high-pitched squeal of wagon wheels as they bore away loads of corpses . . . all this comes back today in vivid colors into my memory and makes me shiver." [5] On the civil war Prieto is vaguer: "As for public affairs, which were at that time the least of my worries, I heard as if by voices that came and went the names of Santa Anna and Farías who took power alternatively, like two impresarios of theater companies. . . ." [6]

Horrified as contemporaries in Mexico were by the epidemic when it was upon them, it proved difficult to get them interested in cholera before it actually arrived. Mexican newspapers reported the ravages of cholera in western Europe when it broke out there in 1831, but Bustamante mentions that people were not impressed: "We thought that these accounts," he wrote in his history of cholera, "parts of which we discredited and considered fabulous, must be greatly exaggerated." [7] Bustamante himself, as a member of the Mexican Congress, tried in 1831 to persuade the Chamber of Deputies to order the cleaning up of refuse dumps in Mexico City, but nobody paid much attention: "My words," he relates, "went as unheeded as those of the aged Noah who, when he was building the Ark, invited his friends to take refuge in it from the flood that threatened them, and was thought a fool for doing so." [8] Yet Bustamante's efforts may have had more effect than he thought, for, in the latter part of 1831 Lucas Alamán, Minister of Foreign Affairs, wrote to Manuel Eduardo de Gorostiza, Mexican Minister in London, asking for information on the cholera epidemic. Gorostiza wrote on December 13, 1831, to Dr. Benito Hordas y Balbuena, a Spanish physician with a practice in London, asking for a report on the epidemic for the Mexican

[5] Guillermo Prieto, *Memorias de mis tiempos, 1828-1853* (2 vols., Paris and Mexico, 1906), I, 89.
[6] *Ibid.*, p. 94.
[7] Cholera MS., p. 235.
[8] *Ibid.*, p. 236.

government.[9] Dr. Hordas was a former professor of medicine at the University of Salamanca, where he had been President of the Academy of Medicine. He had had experience with cholera patients during the epidemics in both London and Paris, and he was the physician to the Mexican legation in London.[10]

What the government most needed to know, if it were to take effective steps to prevent an epidemic of cholera in Mexico, was whether the new disease was contagious or not. Dr. Hordas, in his report, published in Mexico in 1832, followed the opinion of the most outstanding physicians of the day in France, England, and the United States in stating that cholera was not contagious. "I frankly maintain," he wrote, "that [cholera] has not been and cannot be in any way contagious."[11] His opinion was partly based on the immunity that he and his colleagues had had from cholera in spite of close contact with it over a lengthy period. Dr. Hordas logically felt that since cholera was not contagious, *cordons sanitaires* and quarantines were not worth having, but he nevertheless adopted as his own the opinions of the Royal Academy of Medicine of Paris on the subject. These opinions were that a country threatened with cholera from its neighbors should establish quarantines against them, but if the epidemic broke out at home there should be no attempt to quarantine the infected area, since this would hurt both the cholera victims and internal commerce. Once the disease had arrived, public health measures should be the only ones used. Dr. Hordas' advice to governmental authorities actually faced with epidemic cholera was to institute a rigid clean-up campaign, and see that the poorer classes were given their share of assistance.[12] Dr. Hordas did not emphasize the supposed effect of altitude on cholera, but some Mexicans were hopeful that the disease would not appear among them, for European experience showed that it diminished with altitude, and most people in Mexico lived at from six to nine thousand feet above sea level.[13]

[9] Benito Hordas y Balbuena, *Dictamen sobre la cholera-morbus* (Mexico and London, 1832), pp. 1, 49.

[10] Benito Hordas y Balbuena, *Método curativo de la cólera espasmódica y medios de preservarse de ella* (London, 1833), p. 1.

[11] Hordas, *Dictamen*, p. 35; Erwin H. Ackerknecht, "Anticontagionism between 1821 and 1867," *Bull. Hist. Med.*, 1948, *22*: 567, 577-578.

[12] Hordas, *Dictamen*, pp. 41-46; Hordas, *Método*, p. 34.

[13] August Hirsch, *Handbook of Geographical and Historical Pathology* (3 vols., London, 1883-1886), I, 441-442, 446; Charles O'Gorman to John Bidwell, June 10, 1833, FO-50/80B, 105, Public Record Office, London, cited hereinafter as PRO. (From microfilm in the Bancroft Library, University of California, Berkeley).

While debates on matters such as these were proceeding, cholera was drawing steadily closer. It crossed the Atlantic to Canada in April, 1832 and then rapidly spread into the United States.[14] Authorities in the state of Coahuila and Texas learned on November 25 that it had reached New Orleans.[15] But immediate concern about the disease was first shown in the southern Mexican states of Yucatán and Chiapas, perhaps because of the passage by the Guatemalan government on August 7 of a quarantine decree. Guatemala followed this move by other energetic steps, including the publication on December 10, 1832, of a pamphlet outlining a method of preventing and curing cholera.[16]

These actions in Guatemala appear to have started a chain of errors in Mexico. First, the Mexican Minister in Guatemala informed the Governor of Chiapas that cholera had broken out in Guatemala and that the state had better be on guard.[17] Why he should have done so it is difficult to say, for the government of Guatemala is considered to have saved the country from this epidemic of cholera by the quarantine that it established and maintained despite strong opposition from merchants and political opponents.[18] The authorities of Chiapas responded to this false alarm on December 27, 1832, by ordering that the pamphlet on cholera recently issued in Guatemala should be reprinted. They stated that they would take further action against the threat of cholera in due course.[19] Somebody, however, interpreted these activities to mean that cholera had reached Chiapas, and so informed the Federal authorities in Mexico City. On January 4, 1833, Bernardo González Angulo, Minister of Foreign Affairs, officially announced in a letter to the governors of all the Mexican states that cholera had appeared in Chiapas.[20]

[14] "The Cholera Epidemic of 1873 in the United States," *Executive Document*, 43 Cong., 2 sess., no. 95, Jan. 12, 1875, pp. 563, 566-588. It should be noted that the second part of this exhaustive work on cholera is entitled: "A History of the Travels of Asiatic Cholera in Asia and Europe," by John C. Peters, M. D., "in North America," by Ely McClellan, M. D. One of the most valuable parts of it is the "Bibliography of Cholera," by John S. Billings, M. D., pp. 711-1025.

[15] J. Villasana Haggard, "Epidemic Cholera in Texas, 1833-1834," *Southwestern Historical Quarterly*, 1937, *40*: 217.

[16] Francisco Asturias, *Historia de la medicina en Guatemala* (Guatemala, 1902), pp. 151-153. The pamphlet was entitled: *Nuevo método preservativo y curativo para cólera morbus.*

[17] *Nuevo método preservativo y curativo para cólera morbus* (San Cristóval de Chiapas, 1833), no pagination, (cited hereinafter as *Nuevo método.*).

[18] Asturias, pp. 156, 158; Carlos Martínez Durán. *Las ciencias médicas en Guatemala* (2d. ed. Guatemala, 1945), pp. 470-471.

[19] *Nuevo método.*

[20] José Joaquín de Herrera to Mexico City Council, Jan. 7, 1833, Folder Policía, salubridad, cholera morbus, Archivo del Ayuntamiento, Mexico City, (cited hereinafter as AA.).

Along with the unpleasant and inaccurate news, the Minister included some advice, perhaps following the recommendations of Dr. Hordas, on what might be done to prevent the cholera from spreading. He recommended that streets be kept clean, that householders be urged to keep their homes clean, and that refuse that might infect the air should not be allowed to collect.[21] Dr. Hordas had suggested that the poor should be given facilities for taking baths "even if only twice a month," but the Minister may have regarded this as too radical or as impractical for he omitted it.[22] The Minister did pass on a suggestion of a simpler kind that had been made to him by the Professor of Mineralogy at the School of Mining, Dr. Andrés del Rio, whose *Elementos de orictognosia* had been praised by Alexander von Humboldt as the "best mineralogical work in the Spanish language."[23] This suggestion was that some German doctors had observed that a piece of copper worn next to the skin would help to ward off the disease, and he therefore recommended that "so simple a measure, one that offers no inconvenience," might be tried.[24]

During January, 1833, the official government newspaper, *El Telégrafo*, printed several articles on cholera, and in February it followed these with others on the need for cleaning up the Mexico City streets.[25] It was in February, when cholera broke out in Cuba, that the general public first realized that they were in danger. "We began to be afraid when we read that in Havana it had cut down thousands of victims," Bustamante reported.[26] On March 15 the Mexico City Council issued a long and detailed set of regulations for a clean-up of the city that was to be enforced by heavy fines. Every householder was to sprinkle and sweep the street in front, behind, and alongside his house on Monday, Wednesday, and Saturday of every week, even if they were official holidays, between the hours of six and eight in the morning. During the day, when they heard the bells of the garbage carts, they were to bring out their trash. At night, after ten, latrines could be cleaned and emptied. There were stiff fines against those caught relieving themselves in the streets. If they

[21] *Ibid.*

[22] Hordas, *Dictamen*, pp. 46-48.

[23] Alexander de Humboldt, *Political Essay on the Kingdom of New Spain* (4 vols., London, 1811), I, 217. A second edition of del Rio's *Elementos* was published in Philadelphia in 1832.

[24] Herrera to Mex. City Council, Jan. 7, 1833, AA. There is a discussion of the alleged effects of copper on cholera in Horatio Gates Jameson, *A Treatise on Epidemic Cholera* (Philadelphia, 1855), pp. 259-262, 276-278.

[25] *El Telégrafo* (Mexico), Jan. 11, 12, 15, 1833; Feb. 7, 15, 1833.

[26] Cholera MS., p. 235.

were children, their parents or school teachers, or if they were apprentices, their masters, would have to pay the fines. What was more, if they could not pay, men would be sentenced to a week's labor at public works, and women to work in the jails. Owners of pigs were not to let them run loose in the city, nobody was to throw anything at all into the streets.[27] This set of regulations was followed by a second set five days later, and by numerous others in the course of the following year.[28]

If the Federal government had done little up to this point to prepare for an epidemic of cholera, it was perhaps due to the fact that national elections were held in February, 1833, which resulted in General Santa Anna being made President, Valentín Gómez Farías Vice-President, on March 30. On April 1 Farías took over the government, Santa Anna remaining at his estate at Jalapa on the plea of ill-health. Farías' inaugural address emphasized the need for improving the lot of the people, and it was apparent from the make-up of the new Congress that a less aristocratic, more middle class government, comparable perhaps to the Jacksonian Democrats in the United States, had come to power. For three weeks Farías busied himself with such problems as an empty treasury, and ways and means of getting started on a long list of desirable social reforms. Then he arranged for a conference to be held on Sunday, April 21, to be attended by himself and the members of the cabinet, together with the Governor of the Federal District with his staff, the committee on cleanliness of the City Council, and the Superior Council on Sanitation. In his address to the group, Farías "explained the urgent necessity of proceeding to clean up [Mexico City] and its suburbs, as a first precaution against cholera morbus, which is making most grievous ravages in Havana and the rest of the Island of Cuba." He thought it equally essential to establish lazarettos or epidemic hospitals and observation wards, that a subscription fund be raised by voluntary means, to be used only if the cholera did invade the country, and lastly, he thought the civil and canon laws prohibiting burials from being made in churches in which the public gathered for worship should be enforced.[29] Farías' references to the urgent need for cleaning up Mexico City suggest that the city authorities had not been overly diligent in putting their month-old regulations into practice.

After what was described in *El Telégrafo* as a "very satisfactory"

[27] Manuel Dublán and José María Lozano, *Legislación mexicana* (34 vols., Mexico, 1876-1904), II, 494-497.

[28] *Ibid.*, pp. 498-501, 517-518.

[29] *El Telégrafo*, April 22, 1833.

discussion of these matters by the members of the conference, it was agreed that the Superior Council on Sanitation should present at the end of the week a confidential report on the best methods of preserving the public health, and that the committee on cleanliness of the City Council should submit at the same time a plan for a cleanliness campaign for the city and its suburbs. A committee of well-known people was to be formed to start a fund-raising campaign. It was also decided to build two cemeteries, south and west of the city (points of the compass away from the prevailing winds) and to select sites for the establishment of a lazaretto and an observation ward. Finally, the Cathedral Chapter was to be approached and asked to prevent the clergy from allowing burials in churches and chapels. To speed things up, the conference wanted a beginning made on its recommendations within the week.[80]

While there was apparent harmony over cholera preparations, it soon became evident that in its social reforms the government was heading for trouble. On April 13 Miguel Ramos Arizpe, Minister of Justice and Ecclesiastical Affairs, presented a report to Congress recommending that the Indian missions run by the Franciscans in Upper and Lower California should be secularized, that is, turned over to parish priests paid by the government. What was particularly shocking to churchmen about this plan was the dependence of the priests on the government. Another shock, this time for the army, was delivered on April 16, when a decree was passed ordering recruiting for three battalions of infantry and a brigade of artillery for the civic militia of the Federal District. The regular army saw at once that the government was creating a rival force with which to oppose it. It was determined to resist.

By the beginning of May it was clear that unless General Santa Anna could be persuaded to leave his comfortable estate and take over power in Mexico City serious trouble would occur. "The terrible moment has arrived for Your Excellency to come and occupy the supreme post of the first magistrate of the republic," began a pamphlet dated May 8 and addressed to Santa Anna. "The danger is," it went on, "that the army will be destroyed."[81] The pro-clerical and conservative Bustamante noted in his diary on May 9 his opinions of the Farías government: "From what we have seen during his government of nearly two months and [from what we can tell from] his past public record, [Farías] must be considered one of the [worst] demagogues known in the republic."[82]

[80] *Ibid.*

[81] *La verdad desnuda*, Mexico, May 8, 1833.

[82] Microfilm of the Carlos María Bustamante diary in the hands of the writer, (cited

An opposition pamphleteer, writing on May 11, added some further indictments against the Farías government: "It is planned to destroy completely the regular army, to degrade, debase, and if possible to annihilate both clergy [secular and regular], to overturn the pious establishments, introduce into the country every sect, religion and belief, despoil gentlemen of their employment and their property, and raise up the most perverse and immoral of men." [23] By the time these pamphlets appeared, however, Santa Anna had informed the government of his decision to assume the presidency, and he duly arrived in Mexico City on May 15.

The day before Santa Anna arrived at the capital, its citizens were reminded in a pamphlet published by the Dean and Chapter of the Cathedral that an epidemic of cholera, as well as civil war, hung over their heads. The tone of the pamphlet revealed that the Church regarded the government with as much foreboding as it did the approaching epidemic. "Sin is the origin of all calamities that plague the earth," began the warning, and it continued:

> The boldness with which ministers of religion are reviled, the lack of reverence for the Supreme Pontiff, calling him Bishop of Rome . . ., the hatred of the most sacred institutions, the scorn for the most holy solemnities, the mockery of the most august ceremonies and the most mysterious rites of the Sanctuary, the canon laws by which the church has been governed, protected by the state, for hundreds of years even amongst the most civilized peoples, disregarded and trampled under foot . . . the insults to the holiness of the Sacraments, to the purity of the doctrine, to righteousness of morality, to the truth of the dogma. . . . Mexico that was in the past Catholic and religious, Mexico, the favored vineyard of the Lord. How can it be that thou hast become an alien, foreign and odious vineyard for thy God? Ah, Mexicans, in the last moments of your temporal existence, when you are prostrate on a bed of pain, your limbs paralyzed and still, your eyes languid and filled with tears, your face darkened by the horrors of death, when you are abandoned by everything that now occupies you and charms you, your reason quieted, your passions silent, then the cries of your startled conscience will resound in the hollow of your heaving breast. And the respectable ministers of the church, now despised, slandered, and ridiculed, will surround you with holy zeal . . . imploring the mercies of heaven.[24]

This clarion call to repentance by the ecclesiastical authorities in Mexico City reflected the growing tension between the government and the Church, although it should be mentioned that similar warnings were

hereinafter as BD.). The original MS. is in the Zacatecas State Library, Zacatecas, Mexico.

[23] *El Mono*, Mexico, May 11, 1833.

[24] *Nos el Dean y Cabildo gobernador de esta santa iglesia metropolitana de Méjico*, May 14, 1833.

uttered by Protestant clergymen in England and the United States when confronted by the threat of cholera at this time.[85]

When Santa Anna took over the government as President on May 16 he tried to calm the troubled political waters by pouring oil on them. He assured the country that neither the Church nor the army had anything to fear from his government. Four days later he warned the social reformers that they should not attempt to put legislation on the books before it was approved by public opinion because it would not last.[86] Armed revolution broke out, however, before these words of wisdom could have been seriously considered by the opposition. On the morning of May 28 the news reached Mexico City that a Colonel Ignacio Escalada had revolted in the city of Morelia [then known as Valladolid] in the western state of Michoacán. The program of the rebels, issued in a typical *plan* dated May 26, stated in article 1: "This garrison protests that it will uphold at all costs the religion of Jesus Christ and the rights and privileges of the clergy and the army which are threatened by intrusive authorities." In article 2 the rebels proclaimed General Santa Anna protector of their cause and supreme chief of the nation.[87] Bustamante remarked in his diary that the plan seemed ingenious to him, for every Mexican would want to defend "the religion of Jesus Christ," and no soldier could fail to want to fight for the rights of the army. As for the rebels' attempt to enlist President Santa Anna as their protector, Bustamante noted that many people thought that he was in league with Colonel Escalada.[88]

The civil war had begun. It was to rage throughout Mexico during 1833 and into 1834 and was to cause the loss of Texas in 1836. The authorities in Mexico City did not yet know that the even more menacing asiatic cholera had broken out in the port of Tampico on May 24, two days before the revolution started in Michoacán.[89] During the last week of May and the first of June the revolution spread to within a few miles of Mexico City. While Farías struggled to maintain the government and keep the city garrisons loyal to him, Santa Anna left at the head of troops to put down the revolt. Congress was called to immediate sessions to deal with the multitude of pressing problems.

The news of the outbreak of cholera at Tampico was published in the

[85] *See*, for example, J. W. Scott, *The Cholera, God's Scourge for the Chastisement of the Nations* (Oxford, Ohio, 1833).

[86] *El Telégrafo*, May 17, 1833; May 22, 1833.

[87] BD, May 29, 1833 (quoting *La Antorcha*, Mexico, May 29, 1833).

[88] *Ibid.*

[89] Richard Pakenham to Lord Palmerston, June 11, 1833, FO-50/79, PRO.

government paper in the capital on June 7. "Those who are attacked scarcely last six hours," ran the report.[40] On June 8 Farías announced that Santa Anna had been taken prisoner by his own officers in an apparent attempt to persuade him to join the revolution. On the same day the Mexico City garrison joined the rebels and attacked the Farías government, which had only a few civic militia to protect it. Again, on that ill-fated day the Bishop of Puebla, Dr. Francisco Pablo Vázquez, published his pastoral letter to *His Diocesans on Account of the Pestilence Which Is Threatening.*[41] "The fearful mortality that cholera morbus has caused in so many parts of the world," began the pastoral, "is still only for us a crack of the terrible whip with which the justice of our celestial Father chastises before our eyes our other brothers so that we may endeavor in good time to disarm and appease him. . . . We should be more than blind if we did not confess humbly before the Lord that our faults, principally public ones, very much deserve to be punished. Does not the scorn with which the truths and venerable practices of religion are spoken of in conversations deserve punishment without any excuse whatsoever? And does not the liberty with which the young, and even women, read heretical and obscene books and newspapers, which attack fundamental dogmas and ridicule the most holy institutions of the church, deserve to be punished?"[42] What the clergy in his diocese thought of their Bishop's fire-eating language is not known, but Bustamante, who sympathized with the Bishop's point of view, recalled the pastoral as a "horrifying trumpet call announcing desolation and mercy." The government, he thought, was deaf to the warning, intent as it was on ruthless vengeance against the rebels.[43]

If Bishop Pablo Vázquez had known the news from northern Mexico, he could have made his exhortation to repentence even more telling than it was, for two days before his Pastoral was published there were reports of six hundred dead from Tampico.[44] An accurate statistical estimate of the mortality is difficult to obtain because not only did men's estimates of the death toll vary immensely, but their ideas of the town's population ran from three thousand to "less than six thousand." A common estimate of the population at this time, however, was three thousand, and it was

[40] *El Telégrafo,* June 7, 1833.

[41] *Pastoral que el Illm.Sr.Dr.D. Francisco Pablo Vázquez obispo de la Puebla de Los Angeles dirige a sus diocesanos con motivo de la peste que amenaza* (Puebla, 1833).

[42] *Ibid.*

[43] Cholera MS., p. 237.

[44] *Louisiana Advertiser* (New Orleans), June 22, 1833; *Niles Weekly Register* (Baltimore), July 6, 1833, *44*: 305-306.

supposed that some six hundred persons moved out soon after the epidemic started. It was calculated on July 16 that one thousand two hundred persons, that is, one half of those who had remained, perished in the epidemic.[45] Exaggerated or not, the news from Tampico alarmed the whole country.

Tampico was not the first place in Mexico to be visited by cholera, for there were reports in April, 1833, of deaths among American colonists in Texas at the mouth of the Brazos, and other reports of cholera in epidemic proportions along the lower Rio Grande valley, although not at Matamoros.[46] The Tampico attack, however, was the first to cause a large death toll, and the fact that it was over in rather less than three weeks only made the impression of sudden death stronger. What is more, the cholera that appeared in Texas in 1833 did not spread to any of the Mexican settlements at San Antonio or Goliad (which were not attacked until 1834), and it seems probable that it was from Tampico that the disease first penetrated the populous upland areas of central Mexico.[47]

A few days before epidemic cholera appeared in central Mexico, it struck hard in Campeche, a port city of approximately twenty thousand population on the peninsula of Yucatán. The authorities there were not taken by surprise, for they had learned at the end of March that cholera was raging in Cuba, only a few miles from their shores.[48] The state had published a number of tracts on cholera prepared by sanitary commissions or local physicians.[49] In Campeche itself the city fathers had made careful plans to cope with the threatened epidemic. Funds were solicited, three cholera hospitals were set up, committees were appointed in each ward to

[45] O'Gorman to Bidwell, June 25, 1833, FO-50/80B-121, PRO; *El Telégrafo*, June 18, 1833; *The Courier* (New Orleans), June 18, 1833; Tomás Russell to Governor Francisco García, July 8, 1833, unmarked packet, Zacatecas State Archives, Zacatecas, Mexico, (cited hereinafter as ZSA.). *The Courier*, July 16, 1833.

[46] Pat Ireland Nixon, *The Medical Story of Early Texas, 1528-1853* (Lancaster, Pa., 1946), p. 296; S. F. Austin to J. F. Perry, April 20, 1833, Eugene C. Barker, *The Austin Papers* (3 vols., Washington, D. C., 1919, 1928, Austin, 1927), II, 958; *Niles Weekly Register*, April 20, 1833, *44*: 113.

[47] Haggard, p. 225; Nixon, p. 138.

[48] Francisco Alvarez, *Anales históricos de Campeche* (2 vols., Mérida, 1912), I, 252; Henry Perrine, "An Account of the Epidemic of Cholera at Campeche," *Western Journal of the Medical and Physical Sciences*, 1834, *7*: 321-322.

[49] Nicolás León, *La obstetricia en México* (Mexico, 1910), p. 559; José María Valdés Acosta, *A través de las centurias* (3 vols., Mérida, 1923, 1926, 1931), II, 136-139. Titles of the pamphlets are given in: Nicolás León, "Los precursores de la literatura médica mexicana en los siglos XVI, XVII, XVIII y primer tercio del siglo XIX," *Gac. méd. de México*, 1915, *10*: 92, items 291, 292, and in Francisco Guerra, *Iconografía médica mexicana* (Mexico, 1955), items 750, 751.

take care of those stricken in the streets, druggists were ordered to prepare prescriptions for the poor at the expense of the city, and the city council was to meet daily during the epidemic.[50] There were eight licensed physicians in the town, three Spaniards, a Cuban, a Frenchman, and three Americans. One of the Americans, Dr. Henry Perrine, a member of the College of Physicians and Surgeons of New York, who was at that time the United States Consul at Campeche, has left an interesting account of his experiences during the epidemic.[51]

The official date for the beginning of the cholera epidemic in Campeche was June 24, and Dr. Perrine records that a few days before this a ship had arrived from Tampico with cholera aboard.[52] It seems probable, therefore, that Tampico was the source of the Campeche outbreak as well as of those in the interior of Mexico. Whether Tampico got the disease from Cuba or from New Orleans it is not yet possible to determine. Cholera spread in Campeche "with the violence of a hurricane," Dr. Perrine reported in an article prepared for Dr. Daniel Drake, editor of the *Western Journal of the Medical and Physical Sciences*:[53]

> priests fell in the Procession, while carrying the Saint or the Lord whose intercession they invoked. Devotees were attacked on their knees at the Altar, while soliciting the favor of the Virgin Mary. Candles burning before the images in their houses, pious pictures strewed on their beds—holy wooden heads and wooden hands on their pillows and on their breasts—all were of no avail. The houses were soon all closed, and the streets all deserted, except by those whom necessity forced to seek food, medicines or coffins, the Doctor, the Priest, or the dead cart—sometimes all together. Very soon, coffins ceased to be made, and graves to be dug. An armed force alone could compel assistance for the dying or the dead of the hospitals. Propositions to burn the bodies were substituted by shallow excavations in the sand of the sea shores, as a less laborious measure. The corpses of the most respectable persons were slung in net-hammocks to a pole and carried by two men, to some separate hole which they scraped among the bushes.
>
> The mass of dead bodies were piled up in loads like logs, and carted to the common ditch on the shore, where they were laid in rows and covered with a few shovels of sand. The skeletons of several who attempted to fly, were found divested of flesh by beasts or birds of prey. A child apparently a month old, was found alive on the road side, but no traces of the mother were ever seen. Seven priests followed their flocks to unconsecrated graves. Famine accompanied the

[50] Alvarez, p. 254.

[51] Perrine, "An Account," p. 325. For brief biographies of Henry Perrine *see*: William R. Maxon, "Henry Perrine," *Dictionary of American Biography* (21 vols., New York, 1928-1936), XIV, 480-481, and Nelson Klose, "Dr. Henry Perrine, Tropical Plant Enthusiast," *Florida Historical Quarterly*, 1948, *27*: 189-201.

[52] Perrine, "An Account," p. 326.

[53] *Ibid.*, p. 322.

plague. Provisions advanced three or four hundred per cent. Crowds collected at the doors where corn was to be sold but many were carried off by the cholera before it came to their turn to receive a handkerchief full. . . .[54]

Three days after the epidemic began Dr. Perrine, Dr. Juan Antonio Frutos and Dr. Claro José Beraza offered their services free to the public if the City Council would purchase carriages for them. The council approved their request and thanked the doctors, but it is doubtful whether they ever got their carriages.[55] According to Dr. Perrine, the Americans were the only doctors who were able to keep on their feet fighting the disease all through the epidemic.[56] Dr. Perrine recorded his troubles in a letter to the Secretary of State written in the midst of the epidemic: "I can scarcely yet persuade myself that all I have witnessed is not a horrible dream. I am gratuitously serving all classes at all hours of the night and day; am nearly worn out by want of sleep, mental agitation, corporeal labor and repeated illness—but have never been permitted to remain in bed or house twenty-two hours in succession, and have therefore been obliged to take medicine myself in the streets or at the bedside of patients most violently attacked." [57]

The epidemic at Campeche officially ended on July 25, although it began to decline shortly before that date, when the rainy season belatedly started. The losses were great: "*Officially* we buried only about four thousand in four weeks," reported Dr. Perrine, "and not more than four hundred on the most fatal day. Estimating the whole population remaining in Campeche at twenty thousand, the mortality was nominally but twenty per cent. In a village only five miles distant, along the coast, where there was no medical assistance, at least forty per cent of the original number perished, but as the greater proportion fled at the beginning, you can estimate how dreadful was the havoc among those that remained. . . ." [58] A later estimate of the death toll, apparently based on a count of the city's population after the epidemic, was five thousand.[59]

From Campeche cholera spread to Mérida, the capital of Yucatán, a city of between thirty and forty thousand people.[60] The authorities there

[54] *Ibid.*, pp. 322-323.
[55] Alvarez, p. 254.
[56] Perrine, "An Account," p. 325.
[57] Perrine to Secretary of State, July 15, 1833, Consular Despatches from Mexico, Department of State Records, The National Archives, Washington, D. C., (cited hereinafter as NA.).
[58] Perrine, "An Account," p. 321.
[59] Alvarez, pp. 256-257.
[60] Perrine to Editor, *Am. J. M. Sc.*, 1834, *29*: 551.

had made preparations similar to those in Campeche to combat the disease, and for some reason the epidemic they experienced was not so violent as it was in Campeche, although it lasted more than twice as long.[61] The rest of the state suffered severely, although figures for total losses are not available. There were some villages in which local authorities imposed a strict quarantine, forbidding any strangers to enter, and saved themselves from cholera. In one case those who enforced the quarantine were brought to court and tried for exceeding their powers. They won their case, but there is no evidence that the anti-contagionists, who opposed quarantines, learned the error of their ways.[62]

The cholera epidemic in Mexico had restricted itself up to this point to towns at sea level; its movements were now to show that altitude was no barrier to its advances. The first city of importance in the interior that it attacked was San Luis Potosí, capital of the state of the same name, where the first cholera case was certified by Dr. Pascual de Aranda on June 28.[63] The state government, acting on the false warning it had received in January, 1833, that cholera had appeared in Chiapas, emphasized the need for cleanliness in city streets and houses. It had ordered the city council of San Luis Potosí to appoint a committee on sanitation, but it does not appear that much else was done until the cholera actually appeared in the city. No further cases of cholera are mentioned until July 1, when several persons came down with it, and it soon assumed epidemic proportions.[64] Acting in agreement with the state government, the city council made contracts with physicians to attend poor patients free of charge, it being understood that those who said they were too poor to pay were to be given free treatment, even if the physician knew that this was not strictly true. Prescriptions marked with a special sign were to be filled at city expense by the apothecaries. Many families fled the city for areas in the north of the state which at first were free from cholera, but the disease soon appeared everywhere except for the hacienda of Tepetate which, for reasons unknown, escaped.[65]

The Governor of the state of San Luis Potosí at this time was the strongly pro-Federalist Vicente Romero, who was being urged by the Farías government at the beginning of July to send a thousand civic

[61] Perrine, "An Account," p. 322.
[62] *Ibid.*, p. 336; Alvarez, p. 257; Eligio Ancona, *Historia de Yucatán* (2d. ed., 4 vols., Barcelona, 1889), III, 338-340.
[63] Manuel Muro, *Historia de San Luis Potosí* (3 vols., San Luis Potosí, 1910), II, 69.
[64] *Ibid.*, p. 70.
[65] *Ibid.*, pp. 70-71, 75.

militia to Querétaro to help General Santa Anna crush the rebellion.[66] Not only was Governor Romero hard put to it to organize his militia, but twelve hundred rifles that he had ordered from Tampico were delayed by the death from cholera of the muleteers bringing them.[67] By July 21 Governor Romero was able to report that the epidemic was going down, and he added: "If it continues [in this way] without change it will be over in three or four days."[68] It may be that the governor was over-optimistic, for Manuel Muro in his *Historia de San Luis Potosí* records (without stating where he obtained his information) that the epidemic began to decline in August and finally ended in October.[69] It was reported on August 9 that "upwards of a thousand persons" had died at San Luis Potosí and Muro states that the total deaths in the city were four thousand three hundred and sixty-six."[70]

Manuel Muro records a story of the epidemic at San Luis Potosí that not only became a legend there but also reappeared in various forms in other Mexican towns. In most cases the story is told without mentioning the names of persons or other details that lend it authenticity. Muro, however, not only gives these details but mentions the name of an eye witness who told him the story. The story runs as follows: a French tailor by the name of Enrique [Henri] Androis, who kept a shop on the south corner of the Palacio block, came down with cholera. He became unconscious, appeared to be dead, and was taken to the Tequisquiapam cemetery by the last trip made by the dead cart. It was the custom of the grave diggers not to bury the bodies collected on their last round, but simply to leave them in the open ditch until the following morning. During the night Androis regained consciousness, climbed out of the trench and managed to get back to his house. Unable to rouse his servants, he noticed that the window of his bedroom, which was on the first floor, was open (the maid had done this to air the room in which he had "died") and climbed in. Then he knocked as loudly as his failing strength permitted on the door leading from his bedroom to the patio, which was also locked. The servants, terrified at hearing knockings from the dead man's room in the middle of the night, got up and went in search of a priest who, with the police, returned to investigate. Androis lay stretched out on his bed, but he gave clear answers to the priest who questioned him from the

[66] Vicente Romero to Francisco García, July 9, 1833, ZSA.
[67] *Ibid.*
[68] Romero to García, July 21, 1833, ZSA.
[69] Muro, p.76.
[70] Pakenham to Palmerston, August 9, 1833, FO 50/80A-11, PRO; Muro, p. 76.

window. The investigators then opened the door to the room from the patio, and sent to the apothecary for the doctor on duty, who came and took care of his patient. In a few days Androis was back at his shop. The lucky chance which saved him was that he had been taken to the cemetery on the last round of the dead cart, and so had not been buried. Most of the variants of this story depend on this same stroke of luck. The variations of it generally describe the lucky victim as a married man—Androis appears to have been a bachelor—whose wife either almost dies with fright when she sees her husband return from the grave or whose wife dies from the shock, as related in a version from Aguascalientes.[71] Whether they are true or not, these stories reflect a natural human reaction to the risk that all had to run during the cholera epidemic.

The next region to suffer the onslaught of cholera was the wealthy and progressive mining state of Zacatecas, then headed by the able and strongly pro-Federalist Governor, Francisco García. Before he left early in 1833 for Mexico City to become Minister of the Treasury, Gómez Farías had been Lieutenant Governor of the state of Zacatecas. He had practised medicine for many years in Aguascalientes, then one of the leading towns in Zacatecas, and had been on the medical board of examiners in the city of Zacatecas. Zacatecas probably received early in 1833 the misleading information of the outbreak of cholera in Chiapas, together with exhortations to begin a clean-up campaign. Towards the end of March the Zacatecas City newspaper, *El Observador,* praised the city council for the success of their clean-up. But they politely suggested that the authorities might remove the refuse to some area outside the town, and not dump it next to the Alameda, "the only recreation area," for towns-people were finding it increasingly disagreeable because of the bad odors that assailed them there.[72]

One of the editors of *El Observador* at this time was Théodore Léger, a French doctor who had been professor of midwifery of the Faculty of Paris and who was later to emigrate to Texas, where he was one of the physicians attending Stephen F. Austin at his last illness. Dr. Léger had been in Paris during the cholera epidemic there, and was reported to have been unusually successful in keeping his patients alive.[73] With a

[71] Muro, pp. 72-74.

[72] *El Observador Zacatecano* (Zacatecas), March 20, 1833.

[73] *Ibid.*, May 1, 1833; for biographical information on Dr. Léger *see*: Nixon, pp. 394-396, and *The Handbook of Texas* (2 vols., Austin, 1952), II, 46. In addition to the information in these two sources it may be noted that Dr. Léger published two books: *Manuel des jeunes mères* (Paris, 1825) published in Italian translation in Milan in 1827, and *Animal Magnetism; or Psycodunamy* (New York, 1846).

French colleague also living in Zacatecas, Dr. Gabriel Villette de Terzé, who later became Professor of Obstetrics at the reformed medical school in Mexico City, Dr. Léger published the first issue of a medical journal called *Higía* at Zacatecas on April 1, 1833.[74] This journal came out every two weeks but lasted only five months. Its third issue was partly devoted to giving advice to the authorities on cholera.[75] *Higía* contained articles on public health, and there were unsigned articles on the same subject in *El Observador*. Whether these articles were written by Dr. Léger or Dr. Villette is a matter that cannot yet be established, but it is significant that the cholera in Mexico was apparently making physicians aware of the poor living conditions of the masses and of the need for reform. The cholera epidemic in Europe and the United States has been credited with starting the modern public health movement, and a similar effect may be observed in Mexico. The following excerpt from an article on public health from *El Observador* reveals something of the new spirit:

> Most of [the houses of the country people] are badly located; some on damp, muddy land, at the bottom of narrow valleys where the air hardly circulates; others where they are without protection from strong prevailing winds or are near water that is in flood for four months of the year. Can these wretched huts made of a few poles supporting a roof made of leaves or pieces of maguey be called houses? Their walls of reeds make a continuous open window offering no protection from bad weather, their fireplace is the earth in the middle of the hovel, and there is no chimney but the room itself and the openings in the walls and the roof made of leaves. These small, narrow, living quarters provide a single room which is often dug out below the surface of the land surrounding it. Water running on the surface, and water that seeps through naturally, keep the floor of the hut permanently damp, and there is nothing to use to prevent the dangerous results of this. The *petate* [sleeping mat], the luxurious ornament of these huts, on which the whole family lie down together to rest for the night, does not protect them from the dampness. In these warrens that are more fitting for wild animals than for Christians, the air is contaminated by so many people living close together, by their lack of cleanliness and shelter, by the emanations of near-by refuse heaps and pools, and by the filth of domestic animals that abound in these places—all of these factors contribute in dismal fashion to stupefy the human species, causing the destruction and degeneration of life's germ.
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> If we enter the cities, the capital itself, we are astonished and grieved to find

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[74] For biographical material on Dr. Villette *see*: León, *Obstetricia*, p. 257. Dr. Villette published a pamphlet in Paris in 1857 entitled: *La Vaccine, ses conséquences funestes, démontrées par les faits, les observations, l'anatomie pathologique et l'arithmétique. Réponse au questionnaire anglais relatif à la vaccine.*

[75] Nicolás León, "Los primitivos periódicos médicos en México. Nota bibliográfica," *Gac. méd. de México*, 1920, *55* (4a serie, I): 384-386. The Latin American Collection of the University of Texas Library lists in its cards copies of some issues of this rare periodical, but they could not be located in the summer of 1956.

no less active causes of physical degeneration and terrible diseases hanging over the heads of their inhabitants. Ditches and gutters without any slope to them hold up dirty water and rain water in the middle of the streets. Refuse collects in the streets, and mud holes filled with foul and green stagnant water obstruct the way. Other deeper drainage ditches, even more infected and impure, form poisonous sewers which exhale into the atmosphere torrents of putrid miasmas, whose malignancy the purest and most serene sky will not cure. Wherever people walk there are the rotting bodies of dead animals, the filthy prey over which dogs and vultures fight. Noxious insects swarm around filthy sewers close to which are the cave-like, shapeless dwellings of a horde of tattered, lice-infested, poverty-stricken human beings.[76]

Cholera was known to flourish in living conditions such as these, and medical men like Dr. Léger and Dr. Villette, who tried to awaken the conscience of the authorities to the need for reform, were playing the same role in Mexico as their colleagues in Europe and the United States. That the low standard of living of the masses was also a cause of Mexico's revolutions is probably better understood today than it was then.

The outbreak of cholera in Tampico, and its spread to San Luis Potosí, galvanized the authorities of Zacatecas into activity to prepare the people of their state for the worst. There were reports of isolated cases of cholera in Aguascalientes from the middle of May, but the epidemic did not begin in the city of Zacatecas until July 14 or 15, and it is probable that it began in Aguascalientes about the same time.[77] A few days after the epidemic began in the capital of the state, Governor García sent a physician, Dr. Sebastián Delgado, to San Luis to observe the epidemic which was then in its last stages there.[78] At first the deaths in Zacatecas were relatively few, a fact which was attributed by *El Observador* to the zeal of the authorities in preparing for the epidemic and to the agreement between most of the Zacatecas physicians to shun stimulants in treating the disease.[79] But after the first week the death roll began to grow, both in the city of Zacatecas and in Aguascalientes, and the disease spread to other towns in the state. By the end of July the death rate was still going up, with Aguascalientes four times as badly off as the city of Zacatecas. The mining center of Fresnillo was also badly hit.[80] A division of well-equipped state militia, then en route to Querétaro to help General Santa

[76] *El Observador Zacatecano*, April 27, 1833.

[77] Augustín R. González, *Historia del estado de Aguascalientes* (Mexico, 1881), p. 112; Francisco García to Foreign Minister Carlos García, July 23, 1833, Libro de comunicaciones oficiales, ZSA.

[78] Romero to García, July 21, 1833, Gobiernos, congresos y comandantes grales., ZSA.

[79] *El Observador Zacatecano*, July 27, 1833.

[80] Francisco García to Carlos García, July 26 and July 30, 1833, ZSA.

Anna put down the rebellion, was reported in the grip of cholera.[81] On August 2 Governor García reported that mortality in the city of Zacatecas had increased to thirty deaths a day; that Aguascalientes was still suffering great losses; and that Fresnillo, although half of its population had left it, had a proportionately higher death rate than the city of Zacatecas. Mining operations at Fresnillo had been brought to a standstill by the epidemic.[82] On August 6 the Governor reported that the number of deaths in Aguascalientes up to a few days before was one thousand two hundred and twenty-eight, and that the daily death rate in the city of Zacatecas was now forty, most of the increase being due, he thought, to the arrival of people from Fresnillo and other parts of the state. The Governor had to recall the militia that had been sent to Querétaro, for the cholera had caused many men to desert and weakened its discipline.[83] It was finally announced on August 21 that the cholera was declining in the cities of Zacatecas, Aguascalientes and Fresnillo, and the editors of *El Observador* resolutely declared: "We can [now] devote ourselves to the present revolution."[84] It has been estimated that almost five thousand died from cholera in Aguascalientes, and that the total deaths for the state were about twelve thousand. It was reported that one small mining town in the Sombrerete area, La Noria, escaped with no fatalities.[85]

The first death from cholera at Guadalajara, capital of the state of Jalisco, and second largest city in Mexico, occurred on July 24, some ten days after the disease had appeared at Zacatecas.[86] There was little loss of life until the first week in August, then, on August 8 a hundred and two died.[87] The heaviest death rate for the Guadalajara epidemic fell on August 13, when two hundred and thirty-eight died.[88] It is misleading to say, as Hubert Howe Bancroft did, that "at Guadalajara over 200 died daily during the height of the ravage," for it was only on August 13 and 14 that this happened, and the epidemic could not be said to be over until September 20.[89] The final death toll for Guadalajara was estimated to be three thousand two hundred and seventy-five.[90]

[81] Francisco García to Carlos García, July 30, 1833, ZSA.
[82] Francisco García to Carlos García, August 2, 1833, ZSA.
[83] Francisco García to Carlos García, August 6, 1833, ZSA; Romero to García, August 5, 1833, ZSA.
[84] *El Observador Zacatecano*, August 21, 1833.
[85] Elías Amador, *Bosquejo histórico de Zacatecas* (2 vols., Zacatecas, 1943), II, 396-397.
[86] *Boletín de la Sociedad Mexicana de Geografía y Estadística*, 1858, *6*: 293.
[87] *Ibid.* [88] *Ibid.*
[89] Hubert Howe Bancroft, *History of Mexico* (6 vols., San Francisco, 1886-1888), VI, 603, n. 13. [90] *Bol. de la Soc. Mex. de Geog. y Estad.*, *6*, 293.

The Governor of the state of Jalisco from March 1, 1833, was Dr. Pedro Tames, a physician, who is reported to have given his services free of charge to the poor in Guadalajara during the epidemic.[91] Dr. Tames also busied himself with preparing Guadalajara for possible attack from the rebels, and with raising a division of a thousand men to send to General Santa Anna.[92] In the midst of this activity Dr. Tames received a tactless letter from Santa Anna criticising Jalisco for apathy and indifference to the Federalist cause.[93] It was reported that the only town to escape cholera in Jalisco was Tapalpa, and that Tonalá and Chapala suffered least from the epidemic.[94] Reports from the British Vice-Consul at the Pacific port of Tepic, then in Jalisco, mentioned that nine hundred and sixty-four persons had died from cholera during the period from August 19 to October 18. The town was estimated to have a population of ten thousand.[95] A general estimate of deaths from cholera for the entire state of Jalisco does not appear to be available, but it suffered severely enough for people there to refer to the year 1833 as "the year of the cholera."[96]

During the latter part of July and early August cholera spread out in all directions in the interior. It was reported from Durango and Chihuahau; it appeared in Monterrey, capital of Nuevo León on August 4; it spread south and west to Morelia, capital of Michoacán; and it was reported in Guanajuato by the end of July.[97] It reached Querétaro, in the rich Bajío farming region, during the first week in August.[98] Stephen F. Austin later reported that half the population of some towns in the Bajío were said to have died, either from cholera or from the civil war.[99]

[91] Luis Pérez Verdía, *Historia particular del estado de Jalisco* (3 vols., Guadalajara, 1910-1911), II, 272.

[92] Pedro Tames to Antonio López de Santa Anna, August 22, 1833, packet Gobiernos, congresos, comandantes grales., ZSA.

[93] *Ibid.*

[94] Verdía, p. 272.

[95] Eustace Barron to O'Gorman, October 18, 1833, FO.50/80B, PRO; O'Gorman to Bidwell, October 31, 1833, FO.50/80B, PRO.

[96] Verdía, p. 272.

[97] Francisco Elorriaga to Francisco García, August 26, 1833, packet Gobiernos, congresos, comandantes, grales., ZSA; José Isidro Madero to Francisco García, August 31, 1833, packet Gobiernos, congresos, comandantes grales., ZSA; Haggard, p. 220; David A. Cossío, *Historia de Nuevo León* (6 vols., Monterrey, 1933), VI, 36, (this account gives the date of the Monterrey epidemic as August, 1834, but this may be a misprint for 1833); Jesús Romero Flores, *Historia de la ciudad de Morelia* (Morelia, 1928), pp. 122-123; Jesús Romero Flores, *Historia de Michoacán* (2 vols., Mexico, 1946), I, 754-755; *El Telégrafo*, August 1, 1833.

[98] *El Telégrafo*, August 9, 1833.

[99] "The Prison Journal of Stephen F. Austin," *Quarterly* of the Texas State Historical Association, 1899, *2*: 192.

General Santa Anna reached Querétaro with his army at about the same time as the cholera, and quickly left, but not in time to prevent his men from getting the disease.[100] As they marched out of the city soldiers began to fall in their tracks. Dr. Francisco J. Estrada, an army physician who later wrote his memoirs, recorded that Santa Anna criticized him at Celaya for the way in which he handled the situation: "He told me that I had spread terror among the troops by making them believe that that sickness was cholera, whereas it was nothing but white vomit, which could have been cured with cold corn water and some drops of lime juice, for it was all a result of the bad habits of the men, who ate unripe fruit." [101] Later on, however, when they had returned to Querétaro, Santa Anna himself came down with a mild attack of cholerine.[102] "He sent for me," reported the doctor, "and although he made certain stipulations about the medicines, he nonetheless took those that I prescribed for him, and he did not limit himself to the cold corn water with drops of lime juice that he had spoken to me about in Celaya. He took my powders, applied my frictions, kept to the diet I ordered, and got well in a day" [103] At a small place called Apaseo that they passed through, Dr. Estrada and his assistant went looking for food: "One on one side of the road, and one on the other, we knocked at the doors of the houses. We found nobody in all that unfortunate town, where cholera had caused such ravages that the few inhabitants who remained alive had fled, leaving their homes abandoned. When we entered the main square, we saw some mules grazing, each one with a corpse on its back." [104] Santa Anna said in his official account of this march that some two thousand of his men died of cholera, out of a total of four thousand.[105] Fortunately for the government, the forces of the rebels were also badly hit. The British Minister in one of his diplomatic notes to Lord Palmerston wrote: "This calamity may perhaps make both parties more accessible to reason, and thus afford an additional chance of their coming to an arrangement." [106] Unfortunately, there was little sign that such a hope would be realized.

Cholera in Mexico, as in other countries, struck port cities first, but it is noteworthy that the country's largest port, Veracruz, was an excep-

[100] Francisco J. Estrada, *Recuerdos de mi vida* (San Luis Potosí, 1954), p. 152.
[101] *Ibid.*, p. 154.
[102] *Ibid.*, p. 162.
[103] *Ibid.*
[104] *Ibid.*, p. 153.
[105] Pakenham to Palmerston, Sept. 11, 1833, FO.50/80A, PRO.
[106] Pakenham to Palmerston, August 9, 1833, FO.50/80A, PRO.

tion to this rule. The situation in Veracruz was complicated by the fact that it suffered an epidemic of yellow fever during June and July.[107] Also, when cholera appeared at Tampico and Campeche, the Veracruz authorities maintained a quarantine for vessels that had touched at those ports, and passengers on them were not allowed to disembark on the mainland.[108] Cholera finally broke out in Veracruz on August 20.[109] At first it was mild, with but twelve to fifteen deaths a day, but by September 6 deaths had jumped to three hundred a day, and by September 18 some eighteen hundred people out of an estimated population of six thousand had died.[110] The epidemic finally subsided by October 5, when it was estimated that one third of the townspeople had died of cholera.[111]

A French naval surgeon who was at Veracruz during the epidemic reported that the authorities had been lax in cleaning up the town. Every evening they fired some two hundred cannon shots, which he thought might have been of some help, but only if "coordinated with other measures which have not been taken." He felt that the money spent on gunpowder might have been put to better use in buying covers for patients in the San Sebastián Hospital, where most of the cholera cases were brought, and where the death rate was the heaviest. The patients had only a single cotton sheet and a thin woolen covering that was too small to go over them. He thought that the high death rate at this hospital was caused by its being understaffed, the patients getting little attention and the rooms being dirty.[112] The rest of the state of Veracruz suffered severely from the cholera, although it was reported that the town of Perote managed to avoid the epidemic.[113]

(To be Concluded)

[107] J. James to Secretary of State, June 14, 1833, Consular Despatches, NA; James to Sec. of State, July 28, 1833, Consular Despatches, NA.

[108] O'Gorman to Bidwell, June 25, 1833, FO.50/80B, PRO.

[109] James to Sec. of State, August 30, 1833, Consular Despatches, NA.

[110] Ed. de Chaniac, "Remarques et observations sur le choléra-morbus au Mexique en 1833," *Gazette Médicale de Paris*, 1835, *3*: 452-454.

[111] James to Sec. of State, October 5, 1833, Consular Despatches, NA.

[112] Chaniac, pp. 453-454.

[113] Manuel Rivera Cambas, *Historia antigua y moderna de Jalapa* (5 vols., Mexico, 1869-1871), III, 136-137; Manuel B. Trens, *Historia de Veracruz* (6 vols., Jalapa, Mexico, 1947-1950), III, 769.

THE FIELDING H. GARRISON LECTURE *

THE PATHOLOGY OF MORGAGNI AND VIRCHOW

PAUL KLEMPERER **

I deeply appreciate the honor conferred upon me by inviting me to deliver the Fielding H. Garrison Lecture at this annual meeting. My great regret is that my personal acquaintance with Dr. Garrison was only casual, but I am fully aware of his stature as a medical historian and proud that my name is linked with his on this occasion.

At the beginning of my address it might be appropriate to tell you the reason why I gladly accepted the invitation. This might serve as an introduction of myself to the assembly of medical historians of the United States and Canada.

I was trained in the traditions of Vienna of the early 20th century in what is euphemistically called classical pathologic anatomy, but which today is regarded by many as the antiquated pathology of the 19th century. It was the Vienna of the period before the First World War, the city which still breathed the atmosphere of the past, and where medicine was still dominated by the recollection of its greatness in the preceding century. Pathologic anatomy was taught in the building which had been planned by Karl Rokitansky, and there was still active an autopsy *Diener,* Theodor Plisnier, who had served under this revered master. Most of the professors had been assistants of the great clinicians of the famous Second School of Medicine, and they kept awake the memory of their teachers in the young generation of students. And there was Max Neuburger who told us in his lectures not only of the brilliant periods of the First and Second Viennese Schools, but also surveyed for us the basic ideas along which medicine had developed since centuries past. No wonder that the young medical student and graduate remained faithful to the past glory, perhaps sometimes at the expense of a full appreciation of new ideas and discoveries of modern times. Pathologic anatomy in particular was so deeply rooted in the great accomplishments of the 19th

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century that it seemed impossible to advance without due regard for the methods and scientific principles of those times. In my later investigations in the field of anatomic pathology I have never failed to test my own observations with the experiences of preceding periods, and in teaching I have always tried to impress upon the younger generation the value of the historical approach to the problems of modern medicine. I was encouraged in this endeavor by the appreciation which is generally voiced for the history of medicine, but I could not fail to see that it is often lip service only, and that not much time is devoted to its study by the research-minded staffs of our medical schools and teaching hospitals. They are not fully aware of the research potential of medical history for their own special disciplines to which Johannes Müller (1) and Rudolf Virchow (2, p. 5) pointed when they explicitly referred to the study of history as a research tool equal to all the other methods of investigative medicine. When the day of my retirement from active service arrived, I thought that I might still be able to advance my chosen discipline by inquiring into the history of its evolution in order to comprehend the role pathologic anatomy can and should play in medicine of the present day and of the future.

Here I must first clarify the title of my address. Pathology is that aspect of medicine which is concerned with the cause of disease and the mechanisms by which it is provoked. I do not think I could cope with the problem in its entirety. What I should like to discuss tonight is, how morphologic observations and their rational contemplation have promoted our knowledge of pathology in its universal meaning under Morgagni's and Virchow's influence.

No significant contributions to the knowledge of pathologic anatomy have come to us from antiquity and the middle ages. But the motivation for the dissection of the bodies of patients who had died of their disease stems from Galen. He realized that symptoms of disease can and should be correlated with anatomic alterations and expressed this belief in his books "On the Affected Parts" (3): "There are very few signs of disease which do not indicate the affected part. In fact, alterations of function point directly to the attacked site."[1] This principle must have been the rationale for the performance of post mortem examinations on the victims of the plague in Italy during the late 13th and the 14th century and for the early practitioners of morbid anatomy in the late 15th century, Turnius and Benevieni in Florence. With the rise of

[1] At pauca sunt admodum ipsorum affectuum propria signa, quae simul locum affectum non ostendant; etenim actionis laesiones affectam duntaxat partem (3, p. 47 f.).

descriptive anatomy, pathologic anatomy also gained in importance and opportunity. Every great anatomist of the 16th and 17th century was interested not only in systematic, but also in morbid anatomy. Thomas Bartholin, in his *Anatome practica ex cadaveribus morbosis* (4) points to the contrast betwen the anatomist as natural philosopher who can limit himself to the exploration of normal structure, and the anatomist as physician who must derive information useful for his practice from the bodies of the sick. But the state of development of medicine left it optional to physicians to use the anatomic method for their investigations of disease. Thus, individual great physicians, such as Volcher Coiter, Schenck von Grafenberg, Johann Jacob Wepfer and his pupils, and many others, extolled the value of post mortem studies, while others of equal stature, such as Thomas Sydenham and Georg E. Stahl, scorned such practices. Their point of view was clearly stated by John Locke, a friend of Sydenham, who wrote in a fragmentary essay on anatomy that "we see not the tools and contrivances by which nature works. Though we cut into the inside, we see but the outside of things and make but a new superficies to stare at" (5, p. 1121). On another page he maintains that "nature performs all her operations in the body by parts so minute and insensible that I think nobody will ever hope or pretend even by the assistance of glasses or other inventions to come to a sight of them." This attitude of the physician Locke towards anatomy is in full conformity with the epistemology of the philosopher. More than 100 years before, Jean Fernel (6) had also concerned himself with the question of how far anatomy can promote the advancement of medicine.[2] He came to a similar, though less apodictic, negation. Referring to the limitations of cognition he speaks of the obvious data which can be reliably ascertained by the senses, but adds that the hidden facts can be collected and understood by the mind only.[3] And he concludes Chapter One of the first book of his physiology with the assertion that the first principles of teaching medicine should be derived from dissection and sensory perception, but warns that one be not diverted from that which can be comprehended by contemplation only.[4]

[2] De partium corporis humani descriptione liber primus. Quo doctrinae atque demonstrationis ordine ars medica constituenda sit. Cap. I (6, p. 1).

[3] Hinc magno cum labore et studio multa recuperat perscrutaturque sensuum ope, *atque in ea primum incumbens, quae sensibus sunt obvia, occultiora tandem ratione colligit sola mente comprehensa* (*ibid.*).

[4] . . . *tradendae medicinae initium ab humano corpore ducemus*, quod et artis subiectum existit, et *omnium primum sensibus occurrit* notissimum: a quo dein *per minima quaeque deducti ad ea denique mentis impulsu feremur, quae cogitatione sola comprehendi possunt* (*ibid.*).

With the publication of Morgagni's monumental work, *De sedibus et causis morborum* (7), the efforts reached a state of perfection of clinical-anatomic correlation originating in casual observations which had gradually become more deliberate and had been collected by Bonetus less than a century before. The principle that anatomic investigation can establish congruence of clinical symptoms and organ alterations gained recognition, although Morgagni mentions occasional discrepancies in his letter to Meckel prefacing the fifth book. The thesis seemed to be proved that the seat of disease can be perceived within the solid components of the human body. Speculative humoral pathology and its pseudoscientific variations, the iatrophysical and the iatrochemical doctrines were seriously undermined. It is true that Morgagni's investigations did not account for the seat of all maladies. In fact, the host of acute diseases, grouped together as essential fevers, still lacked morphologic determination and the problem of hydrops still remained obscure as in the days of Van Helmont. But the accuracy of Morgagni's clinical and anatomic observations, made available for study by the appended two indexes, was a great aid for diagnosis at the bedside. It seemed to promise that Boerhaave's (8) hope might become true that "the discernment of the experienced physician may once succeed in recognizing the disease in its early beginnings, and in preventing its advance."[8] However, the congruity of clinical symptoms and anatomical alterations was based upon empiricism only and the clinical diagnostic significance of the correlation depended on statistical validation. This was the immediate stimulus for similar methodical investigations which were soon published by Lieutaud (9) and Sandifort (10). Some of these clinical-pathologic studies had even been carried out in the years preceding the publication of Morgagni's final work. Under the influence of Boerhaave's great pupil, Van Swieten, post mortem examinations had systematically been performed in the hospitals of Vienna, and Sandifort in his third volume included fifty clinical-anatomic reports recorded by Drs. Baader and Stoerck during the years 1746-1750. The liberal attitude of the Austrian authorities towards the performance of autopsies gave Leopold Auenbrugger the opportunity to develop a method of direct clinical-anatomic correlation to aid in the diagnosis of chest diseases at the bedside. Auenbrugger's immortal *Inventum novum* (11) was published in the same year in which Morgagni's treatise appeared in print. But his work did not receive the same uni-

[8] Utinam valeret medici exercitati ingenium perspicere tale malum primo in ortu, quando formari modo incipit. . . . Utinam et tunc impedire nosset semel incepti luxuriantis pinguis ulteriorem diffusionem (8, p. 29 f.).

versal acclaim, in fact it was not regarded as important, except by Haller and Stoll, was even ridiculed and almost forgotten, until it was brought to the attention of the medical world by Corvisart nearly fifty years after its original publication. It might be well to give thought to the reason for this neglect, which cannot be understood in the light of our present knowledge. But in the days when Auenbrugger's mind perceived of the relationship between abnormal sounds and physical alterations of the chest organs, his medical contemporaries had not yet fully recognized the significance of a clinical-anatomic correlation. Medicine of that period was not yet pathologic-anatomically minded. And herein lies the eternal contribution of Morgagni, that he convinced the medical profession of the supreme value of morbid anatomy for the advancement of medicine. This progress took place within a generation and is demonstrated by the fact that Auenbrugger's discovery received more attention at the end of the 18th century than at the time of its first publication, and was universally acclaimed after it had been rediscovered by Corvisart in 1808. Laennec's method of auscultation founded upon the same principle of direct clinical-anatomic correlation was fully accepted right after its publication. And less than 100 years later Roentgen rays were utilized for visualization of visceral anatomic alterations only a few weeks after their discovery, because diagnosis in medicine by that time was unequivocally based upon anatomic thinking. This firm foundation had been provided in the first part of the last century as the result of the discoveries of the followers of Morgagni, the great clinician-anatomists of France, such as Laennec, Louis, Brettoneau; of England, foremost Bright and Addison; and the mutual efforts of the new Vienna School, headed by Rokitansky and Skoda. The pulmonary changes in tuberculosis came under careful clinical-anatomic scrutiny, the unity of the puzzling variety of the pathologic-anatomic pictures was revealed and unequivocally established by Robert Koch's discovery many decades later. The recognition of the specific intestinal lesions in typhoid allowed the identification of a clear-cut clinical entity in the chaotic concept of essential fevers and led to its distinction from typhus by Gerhard in Philadelphia. The characteristic membranous lesions of the larynx observed in diphtheria made a separation possible of cases with similar clinical signs and led to important epidemiologic and therapeutic conclusions. Fothergill's and Jenner's discovery of coronary sclerosis in Heberden's angina pectoris focussed attention upon the relationship between vascular disease and cardiac impairment; but it took nearly a century until all the effects of diminished or arrested blood supply upon the myocardium were fully understood.

The classical contributions of Bright and Addison were entirely dependent upon the correlation of exact observations made at the bedside and at the autopsy table. During the decades that Rokitansky, Skoda, and Hebra worked and taught together, the center of scientific medicine shifted from Paris to Vienna (12).

This all too brief survey demonstrates the decisive influence which Morgagni's work had upon the advancement of medicine. The fleeting clinical symptoms were anchored upon unequivocal organ lesions, whereby pathologic anatomy helped to solve the diagnostic problems of medicine; in turn, careful clinical observations tied together apparently heterogeneous anatomic alterations as evolutionary phases of the same morbid process, whereby pathologic anatomy was advanced.

While Morgagni's thesis of localization of disease was not an original discovery, his work far surpassed the similarly oriented investigations of preceding centuries. His accurate observations and precise records reveal him as a natural scientist in the tradition of Francis Bacon. The two appended indexes, listing the clinical data with the corresponding anatomic findings and these in turn with the correlated clinical symptoms, are catalogues of natural historical facts according to the precepts of Bacon and the result of inductive reasoning. This appraisal of the philosophy upon which Morgagni based his work is not mere construction; he himself acknowledged his indebtedness to Bacon in his letter to Monsignore Colendiss (13).

In his *Advancement of Learning* Francis Bacon (14, p. 115) had already pleaded for the performance of autopsies on the victims of illness, because "in the differences of the internal parts are often found the immediate causes of many diseases." Bonetus shared this opinion and the title of his *Sepulchretum* makes reference to the hidden causes revealed by the alterations of organs. Wepfer and his pupils were more circumspect; their aim was the correlation of clinical symptoms only and anatomic lesions. But Morgagni unequivocally committed pathologic anatomic investigations to the revelation of the cause of disease. One can hardly understand that this precise, almost perfectionist scholar should not have recognized the fallacy of this claim. One might find an explanation for Morgagni's apparent conceptual simplicity if one gives thought to the philosophical climate of his period. Since antiquity and throughout the centuries when anatomical investigations had already been carried out, the imperceptible *humores* were regarded as the cause of disease and held responsible for the perceptible alterations of the parts of the body. Pathology and pathogenesis were dominated by speculation and mysticism.

But in the century of enlightenment these doctrines could no longer satisfy the discerning minds of physicians. It is no mere accident that the same period brought forth men like Morgagni, Auenbrugger, and John Hunter. It was a period in which old theories were tested and found spurious, in which epistemology surpassed metaphysics. Morgagni was an empiric, he believed in what he observed. For him causality meant predictability and he had seen the congruence of clinical symptoms and anatomic alterations. Was it not permissible to look upon the clearly perceptible lesions not only as the cause of the symptoms but also of the disease? For David Hume, a contemporary of Morgagni, the idea of causality originated in the constant association of sense perceptions. Did not this concept justify Morgagni's search for correlation and possibly the hope of finding the causes of disease by never-ceasing attempts to correlate the sensory perceptions of the clinician with those of the anatomist?[6] He did not indulge in speculation and therefore avoided the question regarding the cause of the anatomic alteration. This unsophisticated approach to the basic problem of pathology was certainly vindicated by the imposing advance of medical knowledge in the years to come. But the progress would have come to a halt had pathology not found new vistas for its inquiries.

The discoveries of the physical laws by Newton, the disclosures of the basic principles of combustion and respiration by Lavoisier, could not, of course, fail to make their impact upon contemporary medical thought, but their application in medicine was sterile. The mechanical principle entered Boerhaave's and his pupils' system of pathology as an abstract idea to account for the alterations of the postulated elementary fibers as the cause of disease, but there were no tangible observations upon which objective inquiry could be founded. Pathology as the universal science of medicine could not yet utilize the methods of the fundamental sciences because it had no problems originating in observations to which to apply them. When Gaub (15, p. VII) in Leyden spoke of "the masculine strength of observation which is so much the more overlooked, the more the humour of reasoning and the propensity to forming hypotheses, prevail," he pointed to the crucial defect which arrested the progress of pathology. It could be founded neither upon the static observation of the dead nor upon mere speculation as to the meaning of the morbid phenomena in terms of vitalism or mechanism. The morbid process as a whole had to come under scientific investigation. Pathology had to become a part of biology.

[6] Morgagni, *De sedibus* etc., book 5; letter to Joan. Frid. Mechel (see ref. 7).

In the last decades of the 18th century the study of living nature had abandoned the sterile aim of mere description and classification and had turned toward comprehension of the intrinsic relationship among living organisms. Comparative anatomy was born and developed in close association with embryology. Comparison became the heuristic principle of beholding nature. It led to new questions regarding the why and how of the phenomena of life, and dynamic thinking vitalized static observations. Kant's belief that the observational material is organized by aprioristic, supersensory categories of the mind provided the epistemologic foundation for this rapidly developing biologic viewpoint. John Hunter in England, Kielmeyer in Germany, and Cuvier in France were the creators of the new science of life based on "philosophical experience," as Johannes Mueller spoke of it years later.

John Hunter as naturalist was not a mere collector. His anatomic investigations of various lower orders of vertebrates and his study of embryonal development led him to recognize certain fundamental principles governing the formation of animals. In their precise formulation, "if we were to take a series of animals from the more imperfect to the perfect, we should probably find an imperfect animal, corresponding with some stage of the most perfect," we recognize the identity with Haeckel's biogenetic law of a century later. From his study of natural history he learned the methods which guided him in his investigations of normal and abnormal phenomena in human life. "In natural history we are often made acquainted with the facts, yet do not know the cause. Therefore we are obliged to have recourse to experiment to ascertain the causes which connect the facts" (16, pp. 203, 24). He applied this scientific method in his investigation *On the Nature of Blood, Inflammation and Gunshot Wounds,* as well as *On the Veneral Diseases.* Although his famous collection contained a considerable number of pathologic anatomic preparations he left no treatise on the subject. But the works of his pupils, foremost among them Matthew Baillie, William Stark, and John Abernethy, illustrate the guiding principle of his thoughts about pathologic anatomy: i. e., to search for the evolution of the morbid lesion. In other words, he was concerned with the morbid process and not merely with the static organ alteration. Matthew Baillie wrote the first textbook on morbid anatomy of the most important parts of the human body. The preface to this treatise lucidly states the aim of pathologic anatomy: "The object of this work is to explain the changes of structure arising from morbid actions," and following the concept of Hunter he adds, "it is very much to be regretted that the knowledge of morbid structure does not

certainly lead to the knowledge of morbid actions although the one is the effect of the other" (17, pp. I, II). This is undoubtedly a most concise exposition of the aim of a dynamic pathologic anatomy. He is fully aware of the difficulty of attaining this goal, "because morbid actions are going on in the minute parts of an animal body excluded from observation; but still the examination of morbid structure seems to be one of the most probable means of throwing light on it." This remark is reminiscent of John Locke's already-quoted viewpoint, but it is devoid of his skepticism and foresees results which pathologic anatomic research has achieved in subsequent years.

The fundamental contribution to comparative anatomy of Cuvier had no direct influence upon pathology, but it was upon his suggestion that in 1819 a chair for pathologic anatomy was established in Strassbourg with Lobstein the first professor. The official independence of the discipline did not give a new orientation to its inquiries, although Lobstein in his book stressed that the exploration of vital phenomena in disease and the investigation of their origin, pathogenesis, were the objectives of further progress. Yet pathologic anatomy did not advance beyond the time-honored principles of clinical-anatomic correlation, although the accuracy of observation and description of the morbid lesion was much improved. The ideas of Bichat who, in the early years of the century, had tried to establish the elementary composition and functional properties of the animal body by careful physical analysis of the constituent tissues had not fully penetrated into the basic concepts of pathologic anatomy. Cruveilhier, whose comprehension of the value of minute detail made him undoubtedly the most profound pathologic anatomist of his time, could have introduced Bichat's fundamental concept into the analysis of morbid lesions. But his interest centered upon clarifying the gross diagnostic criteria of pathologic organ changes, and his mind was preoccupied with the wish to complete his master work, "The Pathologic Anatomy of the Human Body." His appointment to the chair of morbid anatomy in Paris, endowed by the munificence of his teacher Dupuytren, was a step towards making the discipline actually independent of the influence, but, alas, also of the inspiration, of clinical medicine. This separation, alien to the tradition of the French clinical-anatomic school of medicine, might well have been in part determined by the increasing esteem physiology had gained under Magendie's forceful leadership. The unity of purpose for the investigation of morbid phenomena was broken, and pathologic anatomy lost its opportunity to guide the development of general pathology, just in the very country which had so successfully advanced the fundamental principles of Morgagni.

In Germany and Austria the inquiry regarding the reasons and nature of disease had to pass through a phase reminiscent of the speculative tendencies of preceding centuries. It began as in England with an alignment of medicine with the new natural sciences. But while the mind of Hunter kept aloof from extravagant generalizations, the great biologist Carl Friedrich Kielmeyer gave free rein to far-reaching interpretations of his observations in comparative anatomy. Like Hunter, and entirely independent of him, he recognized the parallelism of ontogenesis and phylogenesis. But he tried to look behind the perceptible facts and conceived of them as the effects of forces of nature which by interdependent quantitative variations are responsible for the variability of organic development. This audacious attempt at uniting the variety of living organizations under a common dynamic principle, presented in an address (18) at Stuttgart in 1793, inspired Schelling's universal identity concept (19, p. 343). The identity of the forces controlling organic and inorganic existence was postulated, and the human mind, as part of the universe, was believed to comprehend its regulation by introspection. This grandiose conceptual scheme captivated the metaphysically disposed mind of German medicine. It is interesting that Schelling's natural philosophy did not gain acceptance in any other country. Cuvier ridiculed it, and in England it received attention only from Samuel Taylor Coleridge, who wrote a short essay (20) in which he expressed identical ideas inspired by a visit to the Hunterian collection. It was not given serious consideration in medical circles except for a Hunterian oration by Joseph Henry Green (21) in the year 1840, at a time when the enthusiasm in the German medical world had already been fully exhausted. In Germany the tempest of *Naturphilosophie* raged for almost a generation, and even men of the stature of Johann Christian Reil joined the movement. The faculties of medical schools came under its influence and impressed the receptive mind of the younger generation. It was a period in which Jean Fernel's word reasserted itself, that the hidden causes of disease can only be comprehended by the mind. But fortunately the technical advances in the manufacture of microscopes gained more influence for Fernel's first assertion, that the things obvious to the senses must not be neglected either. With the universal use of the microscope in descriptive and comparative anatomy, the less speculative minds of men like Doellinger, in Wuerzburg, and Rudolphi, in Berlin, began to gain greater and greater control, not only upon natural science, but also upon medicine. One is generally inclined to regard the period of *Naturphilosophie* as a deplorable aberration from the legitimate road German medicine should have followed.

And, indeed, contributions of value to its advance can be completely written off. But one might ask whether the fascination of speculative philosophy did not, in some measure, promote the capacity for abstract thinking which was subsequently well applied in the awakening of strategic ideas from the contemplation of the ever-increasing mass of factual observations.

Johannes Mueller, whose importance for the development of German medicine in the 19th century cannot be exaggerated, obtained his training under the auspices of natural philosophy. His first major address carries the title, freely translated: "A Philosophic Contemplation of Nature is Essential for Physiology" (22). This essay includes no facts, but it presents a program of the ways of utilizing natural observations in order to gain insight into nature's travail. In his later publications Mueller occasionally expressed his belief in the value of philosophical reflection, but it was subdued, as for instance in the preface to his "Evolution of the Genital Tract" (23, p. 143), when he said: "I always was disposed in favor of treating a subject methodically, thoughtfully, or in other words, philosophically. Because philosophical insight means to me rational discernment." One can well understand how his spirit inspired and guided his students in the pursuit of the various disciplines of scientific medicine in which they became the leaders of the 19th century. During thirty-five years of unusual scientific productivity Mueller worked in, and taught, anatomy and physiology. He also was in charge of a lecture course in pathologic anatomy, but his only great contribution was the microscopic study of neoplasms (24). This was the first attempt to comprehend the minute structure of tumors. While apparently he was not much attracted to research in pathologic anatomy, he had the most universal concept of the importance and scope of general pathology. He expressed it in 1836 (25, p. CLXXVI) with words which sound like a prophecy of the coming of Rudolf Virchow: "May the genius already be born who will create for us a general pathology founded upon physiology and pathologic anatomy and worthy of the state of our sciences of medicine and of nature. Resting upon a serious philosophical education, he must be steeped in natural science, history of medicine, anatomy and physiology, and be an original investigator in chemical, pathologic anatomic, and microscopic analysis of morbid formations. Such a synthesis cannot be expected from a physiologist, it calls for a physician, it is an exciting challenge for a superb talent." There were several specifications in Mueller's policy statement regarding the necessary qualifications of the future leader. He called for a man of exact scientific training and accom-

plishments, but above all, the demand was for a physician, not for a scientific specialist, a mind centered upon the broad problems of human disease. To anatomy and physiology, the research disciplines of medicine, he assigned an important auxiliary role in the development of the universal science of medicine, a general pathology, as he envisioned it. This was the program, but who was prepared to carry it out?

Under the guidance of Morgagni's principles the art of healing had made an impressive advance in the preceding seventy years. For a long time pathologic anatomy had generally been accepted as the foundation of scientific medicine also. "The anatomic concept" of Morgagni, as Virchow (26) called it many years later, had served the practice of diagnostic medicine, it had broken the shackles of humoral speculation regarding the essential nature of disease by disclosing its perceptible seat and, above all, conceptually it aimed at a union with rational contemplation of functional disorders. Anatomic pathology could provide the leadership which Mueller called for, but only if it became fully aware of its driving idea and strong enough to carry it through against decentralizing influences. It had to free itself from the role of a handmaiden of clinical medicine without losing its full partnership in the task of interpretation of human disease; it had to develop as a universal concept of medicine and not as a narrow morphologic specialty. This was the historic mission which Virchow came to fulfill. It we look back now to those days more than a century ago, we can think of only a few upon whom the mantle could have fallen: first among them, Karl Rokitansky. In 1836 already, but certainly at the time when Virchow's star first appeared on the horizon, Rokitansky was the recognized master of pathologic anatomy in Europe. While his achievements in this field, his perfect coordination of morbid anatomy with clinical medicine to the mutual benefit of both disciplines, have secured for him an immortal name in medical history, he was not the creator of the new general pathology, the idea upon which still rests the great edifice of modern medicine. He was the most universal of all the followers of Morgagni, but he was not unaware of the need for a new orientation; he understood the demand for a physiologic pathology, he spoke of chemical pathology and the value of experiments, but fundamentally he could not rise above the confines in which he was the undisputed master. His own words express this limitation when he says in the preface to his *Handbook* (27) that he "is convinced that pathologic anatomy ought to be the foundation not only of medical science, but also of medical practice; that it includes everything which exists of medical knowledge or of what may lead to it." His

personal attitude toward the research potential of methods other than those of what he called "pure pathologic anatomy" is illustrated by the fact that upon his recommendation an independent chair for experimental pathology was established in Vienna and subsequently in all the universities of the Austro-Hungarian monarchy. It is difficult to understand the reason for the failure of this really great pathologist, but it might have been the result of the deficiency of his early medical training in Prague of which he himself spoke in his autobiography (28, p. 27).

It was against this inadequacy of scientific method, against construction of chemical differences where there were only those of morphology, against explanation based on analogy and speculation instead of observation, that Virchow, the great pupil of a great master, directed his harsh critique of Rokitansky's general pathology, against "Rokitansky who reaches out beyond the borders of pathologic anatomy without carrying out investigations beyond these borders; who pushes pathologic anatomy out of the firm realm of facts into the insecure world of hypothesis" (29, p. 46). Virchow's review of Rokitansky's work and his programmatic articles in the first volumes of his *Archiv* are the great debates between the new dynamic general pathology and Morgagni's descriptive pathologic anatomy which, to use the words of Virchow, "could not progress from the symptomatic aspect to the genetic, and could not penetrate from the external phenomenon to the essential nature of disease" (30, p. 402). It ended with Rokitansky's silent withdrawal of his general pathology from the new edition of his *Handbook* in 1855. But Virchow advanced. His discovery of leukemia (31) in 1845 shows him as a superb observer at the autopsy table, and in his studies on thrombosis and embolism (32) in the next year, he illustrates how conclusions reached by thoughtful pathologic anatomic observations can be unequivocally proved by experiment. Every year brought new results of his investigation. But Virchow's greatness is not measured by contributions to factual knowledge; his claim to immortality lies in his method, the application of the microscope to the perception of the morbid lesion, in his aim "to identify the processes within the cell, in other words, to find the physical and chemical foundation of its vital activity" (33, p. 59). Thus he could say that "medicine came three hundred times nearer to the actions of nature" (34, p. 255). This "regulative principle," as Josiah Royce (35, p. 23) called it, resolved the antithesis between form and function and reveals its vitality today again in the important disclosures of the electron microscope and of cytochemistry. His concept and his work dispose of John Locke's skepticism, challenge Jean Fernel's belief in the supremacy of the mind over the senses,

and irrevocably destroy the tendencies to speculation in pathology. It would be wrong, however, to maintain that Virchow conquered Morgagni; no, Morgagni's clinical-anatomic correlation remains the foundation of diagnostic medicine and his observational pathologic anatomy, deepened by histopathology, still reveals important problems for research. But Virchow's vision of general pathology has injected into medicine a growth factor which has not been exhausted and never will be.

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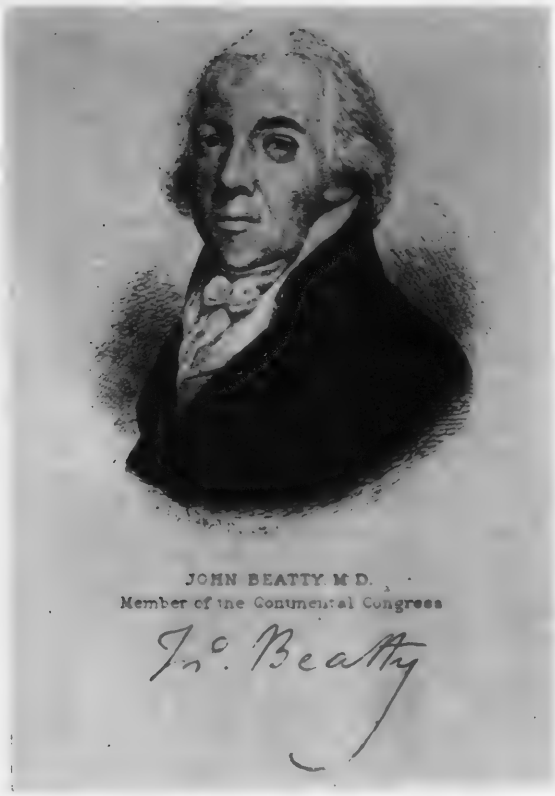


FIG. 1. Etching by Albert Rosenthal, Philadelphia, Pa., 1888. From *The Trenton Banking Company—A History of the First Century of its Existence*, Trenton, N. J.: MacCrellish & Quigley, 1907, p. 62.

GENERAL JOHN BEATTY (1749-1826): PATRIOT AND PHYSICIAN*

FRED B. ROGERS

Students of American colonial history are repeatedly impressed with the civic and communal importance of the physician. Beside the practice of his profession he was, as an educated person, often vitally interested in the public affairs of his community. This is evident by the fact that of the first one hundred members of The Medical Society of New Jersey (organized in 1766 as the first provincial medical society in British North America), seventeen became members of Congress or the Legislature, seven were clergymen, five were sheriffs, and four judges—in addition to medical practice.

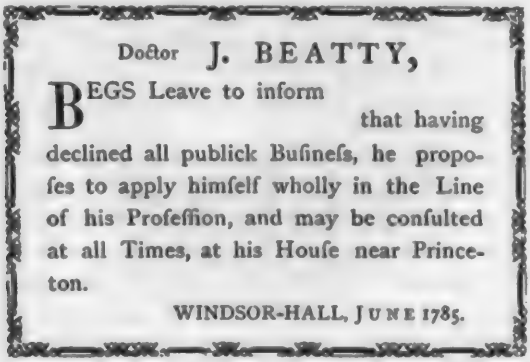
Perhaps the most outstanding figure in this pioneer organization was Dr. John Beatty, patriot and physician. An early member and tenth president of The Medical Society of New Jersey, he served as Revolutionary soldier, state and national official in the early years of the United States. Largely because of his efforts, the first state medical society, shattered by war, was reformed and set on its course to the present day. John Beatty was among the 359 physicians recently listed in a Special Report of the American Medical Association on *Doctors in Government*, published in February 1957. His service as Representative from New Jersey to the Third Federal Congress (1793-95) links him to many other physicians who have helped to shape the destiny of this country as members of the U. S. House of Representatives or Senate.

John Beatty, eldest son of Rev. Charles Beatty, a native of Ireland, was born at Hartsville, Bucks County, Pennsylvania, on December 10, 1749. One of ten children born to this zealous Presbyterian clergyman and his wife, Anne, daughter of John Reading, a Royal Governor of New Jersey, John Beatty was graduated from the College of New Jersey in 1769 (in the first class to graduate under the eminent Scottish divine, John Witherspoon). In 1770 John Beatty served as medical apprentice to Dr. Benjamin Rush at Philadelphia, in the first year of his preceptor's practice there. In one of Rush's notebooks, indexed under "Facts and

* Read at the thirtieth annual meeting of the American Association of the History of Medicine, Richmond, May 8, 1957. The author acknowledges the assistance of Professor Henry L. Savage, Archivist of Princeton University.

Observations" and containing a list of his apprentices, there appears this cryptic comment, "John Beatty, Pennsylvania, 1770. Idle but worthy." In 1771 Dr. Beatty began practice at Hartsville, his native town, and in the following year received a Master of Arts degree at Princeton.

In 1773 Beatty returned to live at Princeton, where he practiced medicine until the outbreak of the Revolution two years later. He became a member of The Medical Society of New Jersey at its annual meeting in Princeton on November 9, 1773. In the following year, on March 22, 1774, he married Mary Longstreet of Princeton; the ceremony was performed by John Witherspoon, his former teacher.


Doctor J. BEATTY,

BEGS Leave to inform that having declined all publick Buſineſs, he propoſes to apply himſelf wholly in the Line of his Profeſſion, and may be conſulted at all Times, at his Houſe near Princeton.

WINDSOR-HALL, JUNE 1785.

FIG. 2. Professional card of Dr. John Beatty—printed on back of a playing card. From Stephen Wickes, *History of Medicine in New Jersey, and of its Medical Men, From the Settlement of the Province to A. D. 1800*, Newark, N. J.: Dennis & Co., 1879, p. 139.

Upon the opening of hostilities in 1775, John Beatty and his four brothers volunteered for military service; all became officers in the Continental Army. John Beatty was commissioned a Captain in the Fifth Pennsylvania Battalion of Infantry in 1775; during the next year he was promoted to Major and Lieutenant-Colonel in the Sixth Pennsylvania Line. In November, 1776, he was captured by the British at the surrender of Fort Washington in New York. Severely treated while a prisoner, he was subsequently exchanged in May of 1778. Perhaps in consequence of this experience, Beatty was appointed Commissary General of Prisoners with the rank of Colonel, after the resignation of Elias Boudinot from this post in 1778. In this laborious and intriguing position, he received explicit instructions from General Washington with

regard to prisoners on parole and the exchange of captives. Because of suspicious activities related to his access within the British lines to Generals Cornwallis and Grant, Beatty was arrested late in 1779 and tried on the charge of trading with the enemy. He subsequently resigned from the Army, on March 31, 1780, after receiving a reprimand in general orders from headquarters.

Returning to Princeton and medical practice, he resided at a farmhouse called "Windsor Hall," still standing on the outskirts of the town. In 1785 he was busy in practice, as a surviving professional card (printed on the back of a playing card) tells us. In 1790 he moved to "Prospect," home of Colonel George Morgan, brother of Dr. John Morgan of Philadelphia, and now the site of the President's House at Princeton University. Known as Doctor Beatty in Princeton, John Beatty was subsequently called Colonel or General Beatty in public life. His Revolutionary War sword was later presented to Princeton University by the Class of 1878; one can see it there today.

From November 14, 1775, to November 6, 1781, The Medical Society of New Jersey suspended its meetings because of Revolutionary struggles in the state. On the latter date, one month after the surrender of Cornwallis at Yorktown, five members met at Princeton to reform the body. The minutes of this meeting note: "Ordered that Doctors Beatty and Henderson be a committee to report the state of the Society since the year 1775." Accordingly, at the next gathering, held at Princeton on May 7, 1782, "Doctor Beatty, agreeable to the order of the last meeting, brought in a report relative to the state of the Society since the year 1775, which report being read was agreed to, and is as follows:

> That with regret we observe the vacation of six years in the Journal of this Society; and to prevent any reflections which might arise, unfavorable to its reputation in the minds of uninformed or disingenous persons, it is thought necessary to assign here the cause and reason of this suspension in medical erudition.
>
> The war (which has been productive of the happy Revolution in America) having claimed the attention of all ranks of Freemen, most of the members of this Society took an early decided part in the opposition to British tyranny and oppression, and were soon engaged either in the civil or military duties of the State. Added to this, the local situation of the war (the scene of action being chiefly in this and the adjoining States), rendered an attendance on the usual stated meetings, not only unsafe but in a great measure impracticable, from the scattered and distant residence of the members. Sensible, however, that improvements which would do honor to the most elevated understandings, are oftentimes hit upon by men of more confined abilities, and that in medicine, as well as in every other circumstance of life, it is our duty to avail ourselves as much as possible of all discoveries tending to the common benefit; as soon as sufficient order and harmony

was restored to civil government and society, a convening of the members was deemed necessary and proper; as well to re-establish it upon its former liberal and reputable principles, as to place it under the patronage of the Authority of the State."

Later in the same year, on November 5, 1782, John Beatty was elected President of the Society—first after its interruption by war. The minutes of the following meeting, held at New Brunswick on May 6, 1783, record: "The Society was opened by the President, with a dissertation on the Blood, and the changes it is capable of undergoing in diseases." This report was continued at the next meeting on November 4, 1783. Unfortunately, it was not recorded in the Society's minutes as were some of the early dissertations.

Beatty continued to be active in the Society for a decade after his term as president. In November, 1785, he was appointed Secretary because of the illness of that officer. During the next ten years he contributed to the minutes and corresponded with organizing medical groups, The Massachusetts Medical Society, College of Physicians of Philadelphia, and Medical Society of New York.

Because of his surgical skill, Dr. Beatty was selected to operate upon a patient seen in consultation at the New Jersey Society's meeting on November 1, 1785. The minutes tell that, "Jacob Probasco, a lad of 17 years, with a tumor in the forearm, was brought before the Society for their examination and advice. After due deliberation, the Society were of opinion, that whether it was a tumor of the encysted kind, or an aneurism, incision ought in the first instance to be made, with a view, if possible, to save the limb; at the same time making every preparation for an amputation in case it should be found necessary."

On the following day, "Jacob Probasco, in consequence of the advice of the Society . . ., attended before them and the necessary preparations being made, Doctor Beatty was appointed to perform the operation; incision was made, a considerable hemorrhage took place (although there was no appearance of an aneurism), and the tumor was extirpated, consisting partly of carnous, ligamentous, ossian and cheese-like substances, not encysted, but lying within the common covering integuments of the arm, and occupying the whole space from cubit to the wrist." Later minutes, in May, 1786, reported that, "four days after the extirpation of the tumor, it was found necessary to amputate the arm. . . . A week afterwards, a stiffness in the neck appeared, and other symptoms indicating a lock jaw, and notwithstanding warm applications to the part and a free exhibition of opium internally, the symptoms continued increasing, the

mouth was obliged to be kept open by force, and a great rigidity of the whole body and limbs took place. In this state he continued, with very little remission, for six weeks; the wound at the same time . . . had a good appearance; the symptoms then began to wear away and the cure was performed in eleven weeks. The patient now enjoys good health."

In 1785 John Beatty was one of a committee appointed to see that, "the Fundamental Institution and Rules of the Society be published." In the same year, and again in 1790, he was cited as an examiner for candidates requesting admission to the Society. His name also appears among fifty members listed on an Act of Incorporation for the Society of June 2, 1790, and again on an amendment to this charter in 1792.

Meeting at Princeton on November 7, 1786, the members, "Ordered, that a seal be made for use of this Society, and that Doctor Smith, Dr. Wiggins and Dr. Beatty be a Committee to procure said seal, and affix what device they deem proper." From this initial proposal came the historic seal still used by The Medical Society of New Jersey.

An interesting reference to Beatty's practice appears in a letter of his preceptor, Benjamin Rush, of September 9, 1793. Writing to his wife, Julia, who had fled to Princeton to escape the yellow fever in Philadelphia, Rush reported his own illness, sleepless work among the sick, the death of his sister and three of his apprentices. He added, "The disease has awakened like a giant refreshed by wine," and directed, "Communicate this to Dr. Beattie."

During this period John Beatty was becoming active in politics, business, school and church affairs. Representative in the New Jersey Legislature during 1781-83, and a delegate to the Continental Congress in 1784-85, he also represented Middlesex County in the State Convention that ratified the Federal Constitution in 1787 and was Speaker in the State Assembly of 1789. From 1793-95 he was one of seven physicians in the Third Federal Congress, serving in the House of Representatives. On the expiration of his term in Congress, he became Secretary of State of New Jersey and held that office for ten years.

In 1795 he moved to Trenton and built a fine home on the banks of the Delaware River, near the present State House. He became caretaker of the State House grounds adjacent to his home and rendered them profitable by keeping pasture and cutting hay. The Doctor also served as an elder in the First Presbyterian Church at Trenton and was active in Masonic Lodge No. 5 there.

His first wife died in 1815; three years later he was remarried, to Catherine Lalor of Trenton. Two children had been borne by his first

wife: a daughter, Anne, who died in infancy—of a convulsion attributed to cannon fire during the Battle of Princeton, and a son, Richard Longstreet Beatty, who graduated at Princeton in 1797 and became a prominent lawyer. In his later years John Beatty served as President of the Trenton Banking Company (from 1815 until his death), and was Treasurer of the New Jersey Society of the Cincinnati. Also, in 1803 he was President of the Delaware River Bridge Company at Trenton.

Interested in education, General Beatty was for seventeen years a Trustee of Princeton College (1785-1802) and was Treasurer of his *alma mater* in 1787-88. He also served as a Trustee of the Princeton Theological Seminary during the last four years of his life.

John Beatty died suddenly of apoplexy on May 30, 1826—in his 78th year. His funeral was attended by a large group of mourners from many walks of life. He was buried in the First Presbyterian churchyard at Trenton where one can read his epitaph today:

> Sacred to the memory of Gen. John Beatty, born Dec. 10th, 1749, died May 30th, 1826. Educated as a physician, he early became distinguished for benevolence, assiduity, and skill. In the War of Independence, in important military stations, he faithfully served his country. By the public voice, he was called to the discharge of eminent civil offices. In the State and National Legislature repeatedly a representative, and always active and influential. For many years, a ruling elder of this church. In every walk of life, amiable, honorable and useful. He crowned the virtues of the man, the patriotism of the soldier, and the sagacity of the statesman, by the pure piety and sincere religion of the devout and humble Christian.

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HISTORICAL RELATIONSHIP BETWEEN SCIENTIFIC AND LAY MEDICINE FOR PRESENT-DAY PATIENT EDUCATION *

BRUNO GEBHARD

There is no need to define scientific medicine, but what constitutes lay medicine? For the purpose of this paper I would like to define lay medicine as the patient's concept of health and disease as applied to daily family living. I prefer "lay" medicine to "folk" medicine as the latter term has too much the connotation of ignorance, superstition, and quackery. I feel that lay medicine comes close to what was described in the last century as domestic or popular medicine. Charlatanism and quackery are some of the elements of lay medicine, but there are positive elements of a non-commercial nature which are condensations of century-old traditions and which have survived the test of time.

A person becomes a patient when he or she is physically or mentally not at ease. No physician can afford to disregard what his patients think, feel, or do about their illnesses. The patient's nosology, his understanding of the character of the disease, no matter how primitive or wrong it might be, is just as important in the treatment of the disease as the physician's nosology. It is always the patient, not the physician, who makes the first diagnosis that "something is wrong" with him.[1]

Depending on his intellectual and emotional makeup, not forgetting his socio-economic status, the patient's reactions—and actions—will differ. He may do nothing or will try to do something by himself, he may look for help to a member of scientific medicine, or he may be one of the 20 per cent of our population who prefer a limited practitioner—a faith healer. a science reader, or worse, a quack.

Medical historians have given little attention to the consumer's viewpoint and understanding of the practice of medicine. Most of them mention the patient in the foreword of their standard works and let it go at that. In his fourth edition, Garrison [2] gives us an excellent survey of the

* Read at the thirtieth annual meeting of the American Association for the History of Medicine, Richmond, Virginia, May 6, 1957.

[1] Bruno Gebhard, "The Cleveland Health Museum's progress toward patient education," J.A.M.A., 1952, *150*: 1594-1598.

[2] Fielding H. Garrison, *An Introduction to the History of Medicine* (4th ed.), Philadelphia: Saunders, 1929.

present thinking about primitive medicine of centuries ago, but little about more recent periods. Neuburger, a typical representative of a society in which *Besitz und Bildung* (property and education) were synonyms, has little to say about what is referred to in German as *Volksmedizin* (folk medicine), and then mostly in a depreciative manner. In his excellent foreword to Otto von Hovorka and A. Kronfeld's *Vergleichende Volksmedizin* Max Neuburger stresses the fact: "In pre-Hippocratic days . . . professional medicine and folk medicine went the same way for a long time and their basic conceptions were essentially the same." [3] For him the founding of the universities is the separation point between the two types of medicine. He acknowledged the well-known fact that scientific medicine today still takes many of its remedies from folk medicine, but then he turns about, describing the latter as "atavism" as seen from "the standpoint of cultural progress." Written in the early part of this century it expresses more or less the thinking of European physicians of that day.

Karl Sudhoff, my beloved teacher in medical history, has only scorn for everything which is not *Schulmedizin* as taught in the universities. His anger is especially directed against those lay practitioners who enjoyed, within the German law of *Kurierfreiheit* initiated by Rudolf Virchow in 1869, an unlimited and often quite lucrative practice of medicine. For Sudhoff, "All medicine practiced by laymen is only thievery from the All-Mother Medicine," and all they preach is nothing new "but a simple steal from former periods of medical development." [4] His opinions are not really scientific but might be called "scientistic," a new word coined by von Hayek [5] to denote a fake scientific method where matters not of natural or physical science, but of human quality, are concerned.

Of the present generation of medical historians, Erwin H. Ackerknecht shows a more positive approach to the relationship between lay persons and physicians in stating: "The desire and need to understand medicine is not confined to the medical profession. It is of personal concern to the object of medical practice—the patient. . . . Yet, while the average person now gets far more medical attention than in any previous period, it is paradoxical that the meaning of disease and its treatment is even more obscure to him than to his ancestors." [6]

[3] Otto von Hovorka and A. Kronfeld, *Vergleichende Volksmedizin*, 2 vols., Stuttgart: Strecker und Schröder, 1908-09, vol. 1, p. xxiii.

[4] Karl Sudhoff, *Skizzen*, Leipzig: Vogel, 1921, p. 6.

[5] F. A. von Hayek, "Scienticism and the study of society," *Economica*, London, 1942, New Series, 9: 267-291.

[6] Erwin H. Ackerknecht, *A Short History of Medicine*, New York: Ronald Press, 1955, p. xiii.

If this is true, could the explanation be that the meaning of disease is just as obscure to the present day physicians as it is to their patients? Ackerknecht elaborates his point by stating: "The widespread absence of real understanding is reflected in the continuous use of such expressions as 'miracle drug' or 'miracle operation,' which underlines the fact that at heart many of our contemporaries feel themselves to be surrounded by a magic universe, just as their Stone Age or medieval ancestors did."[7]

It seems to me that the handwriting on the wall looks much more like that produced by Madison Avenue. Not only has the advertising industry helped in confusing the public on basic principles, it has even increased the body of superstition and has managed to find more than 300 ailments, as listed in *Printer's Ink* (January 9, 1948). Many have been added since then, widely publicized by television, such as the malady well known to all Americans as "tired blood," but none of these advertised diseases is likely to be entered in the *Standard Nomenclature of Diseases and Standard Nomenclature of Operations.*

Today's laity is either accused by professional medicine of being ignorant about medical affairs or of knowing too much about medicine, of being confused, or of indulging in morbid curiosity. In answer to the query by a pharmaceutical house organ: "What three aspects of medical practice do you find most disturbing?", one physican said: "The most disturbing thing to me is that the public gets partial information concerning medical diseases from lay articles written either by lay people or by doctors who are more concerned with their literary efforts than their knowledge of medicine. The readers get much misinformation about diseases because of this."

On the other hand, in a recent conference called by the American Psychiatric Association this problem was carefully studied and the conclusion reached was that: "The opinions of the lay public are not in gross disagreement with the experts. The average person, like the experts, rejects superstition and quasi-magical explanations."[8]

Where, then, do we stand regarding the status of lay medicine? Does a historical analysis help us in clearing the situation regarding patient education? Education is concerned with changes in knowledge, habits, and attitudes; it shares with medicine the basic characteristics of being both science and art. Today the emphasis is much more on the first and has made us neglect the importance of all the elements which we call the

[7] *Ibid.*, p. xv.

[8] American Psychiatric Association, *Psychiatry, the Press and the Public*, Washington, 1956, p. 7.

"arts," whether the so-called "liberal" ones or applied arts. History of the arts and science is an inseparable part of one's own philosophy, but little of it has been applied to the historical development of lay medicine. To be specific, this means a reappraisal of such elements as superstition, magic, and myth. This has been going on for more than three generations, from the Romantic school of medicine to the present day studies of psychoanalysis and social anthropology.

So far as basic principles are involved, Lynn Thorndike, in his *History of Magic and Experimental Science*, gives us the best approach to our problem in stating "that the history of magic is bound up with the history of science as well as with folk-lore, primitive culture, and the history of religion." [9] Regarding magic: How much magic is there in present day lay medicine?

If we adhere to his definition of magic as "including all occult arts and sciences, superstitions, and folk-lore," [10] there is plenty of magic belief in our days. No daily newspaper is without horoscopes and "astroguides." To quote from my own morning paper of today's writing: If you are a Taurus, "tension abates and you begin to see the results of your efforts. Health is improved, denote radiations." How far magic is harmful or helpful is not easy to decide. The intellectual's objection to magic as being unscientific and therefore untrue cannot always be defended. Edwin S. Boering has said: "Beliefs can be false as to logical content and good as to use and function."

Magic and medicine have developed together and W. F. Hegel's statement: "Magic has existed among all people and at every period," is true for the present and will be true for the future. Pliny's word is that: "No one doubts that magic originally sprang from medicine and crept in under the show of promoting health as a loftier and more sacred medicine." This has become true again in our present day, with the increasing emphasis on psychosomatic medicine and religious medicine.

Regarding superstitions, one might differentiate between timeless and time-limited superstitions, as every age creates its own. The first of these concerns the elements of nature, the second the by-products of our changing civilization and technology. An example of the latter is the fallacy that after the centuries-old use of iron, at first enamel and later aluminum kitchenware were responsible for the increase in cancer. The same happens with the introduction of new foods. Bananas in pre-World

[9] Lynn Thorndike, *History of Magic and Experimental Science*, vol. 2, New York: Macmillan, 1923, p. 977.

[10] *Ibid.*, vol. 1, New York, 1923, p. 2.

War I Europe were accused of spreading infantile paralysis. For this a chronological explanation is easy. In the days before ship refrigeration, the arrival of bananas on the market coincided with the early summer months when outbreaks of infantile paralysis are usual.

A more recent example of time-limited superstitions is the influence on the weather of A- and H-bomb tests. On a lecture tour of West Germany I heard again and again that a period of "bad weather" was caused by the American H-bomb explosions. The Russian activities were just as close but were usually ignored in their effect on the weather, if any.

Scientific medicine itself is a continuous source of superstition for the layman, as stated by Alonzo Clark: "The medical errors of one century constitute the popular faith of the next."[11] A good example is the still prevalent superstition that fish is a brain food. Morris Leikind quoted to me the following jingle from his high school days in Cleveland:

> Fish is a brain food that is never said to fail,
> I therefore recommend that you should eat a whale.

This little poem includes a double superstition, as whales are not fish. I am not sure whether Friedrich Buchner or Jacob Moleschott (1822-1893) should be credited with the slogan: "Without phosphorus there is no thought." Claudia de Lys[12] points out that Jean Dumas, one of Louis Pasteur's teachers, was the first to establish the fact that fish is particularly rich in phosphorus and at about the same time it was proved that the brain contains considerable amounts of that element. Louis Agassiz, professor of Natural History at Harvard, went all out in recommending fish as being good for the brain, as both contain phosphorus. This superstition has served at least three generations and might hang on for a long time to come.

It is hard to say what the change-over time from scientific fact to error or to superstition held by lay persons is, as scientific facts survive for centuries or at least for several generations. We have one case in point wherein a theory was widely accepted by both the profession and lay persons as a fact and was finally discarded by the same scientific generation. I am speaking of focal infection. In 1912 Frank Billings together with Edward C. Rosenow, advanced the theory that dental foci of infections were implicated in the causation of a number of systemic conditions particularly in disease conditions of the joints.[13] Mass tooth

[11] Quoted by Garrison, *op. cit.*, p. 14.

[12] Claudia de Lys, *A Treasury of American Superstitions*, New York: Philosophical Library, 1948, p. 82 f.

[13] Frank Billings, *Focal Infection*. The Lane Medical Lectures, New York: Appleton, 1916, p. 3.

extraction and extirpation of tonsils as a cure for joint, heart, and kidney ailments took place on a grand scale. In the late 1930's and early 1940's skepticism became widespread regarding the acceptance of this theory, and in 1951 the American Dental Association issued a detailed report on this subject, giving it a first class funeral. In an editorial it laments the fact that: "The mixture of science and empiricism . . . has fostered confusion in the minds of both the practitioner and the patient and no doubt in many instances has affected adversely the quality of professional service rendered, much to the detriment of public health."[14]

There are other good illustrations of one-generation-lifetime scientific theories, such as the one promoted by Sir William Arbuthnot Lane on the danger of auto-intoxication by chronic constipation to be remedied by extirpation of large parts of the colon. The repetition of the same arguments by the laity over many generations against new scientific concepts in therapy seems to give support to the old adage that poverty and ignorance will always be with us. Against that I like to quote Thorndike: "Even the most intellectual men seem to have a limited number of ideas, just as humanity has a limited number of domestic animals."[15]

The "poison" argument of the days of antiquity is still with us in the current public discussion about the preventive dentistry merits of water fluoridation. The same arguments which were used 50 years ago against water chlorination and about 30 years ago against adding iodine to table salt are now coming up again against water fluoridation.

Lay medicine, like scientific medicine, has its favorite subjects. They are mostly in the line of chronic diseases, and as remedies they especially prefer food items. A current example is the book *Arthritis and Common Sense* which has been a best seller for two years and which has out-sold both *Webster's Dictionary* and the *Standard Version of the Bible.* This book claims a cure for arthritis through extensive use of cod liver oil. But we all know that professional people too do not always avoid the pitfall of taking a newly-discovered remedy as a cure for all cases of a certain disease. In my lifetime the complete eradication of tuberculosis has been promised twice by scientific authority.

Of historical note is the current rapprochement between scientific and lay medicine. This is especially true in the United States through the active participation of the general public in the many health movements, both in the form of financial contributions and in active volunteer work. For the general public, medicine has become science *per se.* This was even

[14] *J. Am. Dent. A.*, 1951, *42*: 615.
[15] *Thorndike, op. cit.*, vol. 2, p. 983.

acknowledged by the late George Sarton in saying: "The problems of health vs. disease, of life vs. death are so important to the average man that he may be excused if he is led to believe that medicine is the hub of science." [16]

The delayed time between a scientific discovery and public acceptance is becoming shorter and shorter. It took decades until small pox vaccine was generally accepted but the Salk vaccine was accepted nearly overnight. It was almost 30 years before Landsteiner's discovery of blood groups in 1900 found wide acceptance and became known to the general public, but Wiener's discovery of the Rh factor in 1940 was common knowledge in five years.

One of my tests along these lines is the appearance of a new word or concept in the cartoons of the *New Yorker* and the *Saturday Evening Post*. On January 19, 1946, a full page cartoon appeared in the *New Yorker* showing a conference in a Hollywood producer's office, with the caption: "How's this for an angle, Chief? Pidgeon is one of those Rh negatives, and Garson is an Rh positive, and they fall in love. . . ."

Papanicolaou's cytological test for cancer (1943) is already widely known in women's circles. P. T. A. groups, and not only those in suburbia, phrase their questions on educational problems nowadays in Freudian terms. It will be interesting to see how long the age-old connotation of sex as sin, as expressed in words like "curse," will prevail.

There will always be a gap between scientific and lay medicine, not because of substance and intent but because of method and approach. There is the scientist in his constant search for facts, tempered in his work by permanent doubts; there is the patient with his basic needs of faith and belief in recovery and salvation. Some of these needs will be satisfied via myth and even magic. The scientifically trained physician often becomes the personification of myth and magic for the suffering patient. Faith and confidence are indispensable factors for successful healing. Sickness is always an emotional affair but reason is the language of the scientist. The need, so far as patient education is concerned, is not for a common language, but what Iago Galdston has referred to as "a *translatable* language," [17] meaning that the specialized term of the scientific discipline should be adequately translatable by and comprehensible to the other side.

[16] George Sarton, *A History of Science*, Cambridge: Harvard University Press, 1952, p. xii.

[17] Iago Galdston, "Perspectives and prospectives," in *Ministry and Medicine in Human Relations*, New York: International Universities Press, 1955, p. 145.

We know all too little about the beliefs, habits, and attitudes of the American people regarding health and disease. Being a mixture of many different sources and coming from different national origins and races with a diversity of religious affiliations, they would make a good basis for a study on how much old beliefs are still prevalent and practiced in the urban and industrial life of our days. What is badly needed is a history of American lay medicine in contrast with that of pioneer days.

Sudhoff's lament about medical history in general as being "an accidental science"[18] is even more true for American medical history. A history of popular American medicine should be a planned history. It should be written backwards, beginning with the present state of affairs, and should be organized on regional and local bases according to nationality groups, racial origin, and religious inheritance. The big question is: Who is going to do it?

[18] Sudhoff, *op. cit.*, p. 12.

TEXTS AND DOCUMENTS

LATIN MANUSCRIPTS OF WORKS BY RASIS AT THE BIBLIOTHÈQUE NATIONALE, PARIS

LYNN THORNDIKE

Medieval Latin versions of the works of Abu Bakr Muhammad ibn Zakariya al-Razi or Rasis (the spelling Rhazes is not found in the manuscripts) are seldom accompanied by the name of their translator into Latin. But, apart from the *Continens* or *Elhavi*,[1] translated in a. d. 1279 by Feragius (Faragut or Faraj ibn Salim), Gerard of Cremona would seem to have the best claim to be regarded as such. In the list of his translations which his associates drew up are included:

Liber Abubacri Rasis qui dicitur Almansoris tr(actatus) x
Liber divisionum Almansoris omnes (*sic*) CLIIII capitula cum quibusdam confectionibus eiusdem
Liber Rasis introductorius in medicina parvus.[2]

Their previous statement that Gerard never inscribed his name on any of his translations serves further to explain the anonymity of the manuscripts above stated, and suggests that they may have overlooked some of these themselves. This of course does not preclude the possibility that others engaged in the rendering into Latin of the works of Rasis, since it is not uncommon to find evidence of more than one translation of the same work of a given author.

In the present paper some account will be given of the Latin texts of such medical works by Rasis as are preserved in eight manuscripts, of which the majority are thirteenth century, at the Bibliothèque Nationale in Paris.[3] I do not know that any such manuscript is extant from the twelfth century, although the original translations by Gerard were made during its second half.

[1] Printed at Brescia, 1486 (Hain *13901; Klebs 827.1; IAL R172); and in 1506 and 1509.

[2] Vatican Latin MS 2392, fol. 98r; Baldassare Boncompagni, "Della vita e delle opere di Gherardo Cremonese," *Atti dell' Accademia Pontificia de' Nuovi Lincei*, IV (1850-1851), Rome, 1852, pp. 387-493.

[3] Five of them were examined in 1920, chiefly for the Experiments of Rasis: see *A History of Magic and Experimental Science*, II, 751-56, 772.

In Latin MS 6893 of the thirteenth century the opening work by Serapion is said at both its beginning and end to have been translated by Gerard.[4] Then works of Rasis follow, but in no case is Gerard named as translator. At fols. 129va-130rc are tables of contents in five and three columns of the ten books to Almansor, whose text fills fols. 131ra-216rb. We shall say more of it in connection with our next MS.

With fol. 217r headings in the top margin in red and blue capitals represent the text beneath as the Experiments of Rasis,[5] but the text itself is concerned with pains in the joints.[6]

"capitulum i in divisione de dol' iuncturarum"; *incipit*, "Materia ex qua generatur dolor iuncturarum . . ."
(fol. 217va) rubric, "Capitum de cura universali ad passiones iuncturarum"
(fol. 218rb) rubric, "Capitulum de dieta"
(fol. 218vb) rubric, "dera'es mundificantibus sanguinem et cordem"
rubric, "Capitulum de medicinis que purgant flegma et humores crudos"
(fol. 219ra), rubric, "De medicinis purgantibus melancholiam"
(fol. 219rb), rubric, "Capitulum de his que purgant flegma et coleram insimul"
(fol. 219va), rubric, "Clisteria in usu han ce(?)"
(fol. 219vb), rubric, "Capitulum de emplastris et unguentis que dissolvunt dolorem."

And so on. The treatise concludes with a series of plasters at fols. 282vb-283rb.

At fol. 283va, "De cura puerorum in prima etate," begins "Sahafati accidit pueris et forte accidit in facie et in corpore. . . ." After rubrics, "De favositate puerorum," "De magnitudine capitis puerorum," etc., and a discussion of spasm, we read at fol. 285rb, "Explicit tractatus rasy de dolore iuncturarum et de egritudinibus puerorum in prima etate, deo gratias," as if the two were a single treatise.

Our manuscript then turns from experiments of Rasis to experiments of Galen with the rubric,

liber G. de medicinis experimentatis que intitulatur experimentatio medicinalis quam

[4] As usual in 7 books. At fol. 1ra, rubric, "Tractatus Ius b'inarii Io. fi. Serap.' medici translatus a magistro G. cremonensi de arabico in latinum"; fol. 129ra, rubric, "Completum est postremus agregati ex libro medicine schotc̃e(?) Io. filii Serapionis. Et hoc librum transtulit magister G. cremon' in tolleto de arabico in latinum."

[5] L. EXPER. RASIS. After fol. 219v the next leaf is numbered 280, but EXPER is still the running head. There seems to be no break in the text: fol. 219vb ends, ". . . donec fiat ipsum unguentum et pone decimam partem opii," and fol. 280ra continues, "et mole cum lacte et superpone et cum calefactum fuerit remove et appone allud(?)."

[6] Fol. 217ra, "Dixit Rasis volo in hoc capitulo dicere medicinas que necessarie sunt doloribus iuncturarum scilicet medicinas laxativas que in libris non sunt dicte nec manifeste. . . ." These words very likely account for the treatise being called *Experimenta Rasis* as well as *De doloribus iuncturarum*.

transtulit Iohannicius de greco in arabicum et magister Franchius de arabico in latinum;

and the *incipit*, "Dixit G. Ignis qui descendit super altare combussit libros regis. . . ." They include the three compound and twenty simple medicines (elsewhere, thirty) of the experimenter of Athens, here called Thaatō (elsewhere, Achaason).[7] At fol. 290rb we read:

Dixit G. iam diximus in hoc libro quem vocamus librum experimentationis medicinarum quas probavimus et accepimus a sapientibus hominibus . . .

but in the same column of text is found

De aptitudine medicinarum ut sine horribilitate possint sus(?) secundum Rasym.

At the bottom of fol. 290vb is the rubric, "C. de ornatu faciei." One Oleum after another occupy fols. 291vb-293vb. Also on fol. 293vb we have the running head "Secreta Y,"[8] the *incipit*, "Pervenit ad nos quod ypo. cum morti appropinquaret . . ." and the rubric,

Incipit liber prescientie Ypo. Hic est liber de veritate .y. qui intitulatur conservatio libri prescientie y. qui est inventus in sepulcro eius in pixide eburnea et est 22v(?) propositiones(?)

in other words, the pseudo-Hippocratic tract commonly known as *De capsula eburnea*. It closes at fol. 295va, ". . . cuius sudor assellarum fetet pronost' lepram. Expliciunt experimenta rasi et G. et secreta Y. medici gloriosissimi deo gratias." Thus the Experiments of Rasis are confused with his tracts on pains in the joints and the diseases of boys, and with those of Galen, not to mention Hippocrates. The rest of the page is left blank, as is all of fol. 296r-v.

Fols. 297ra-326rb are occupied by the *Divisiones* of Rasis. A four column table of its contents fills fol. 297a-d. On fol. 297va it opens as usual, "Ventilata fuit in presentia cuiusdam viri . . ." and the first chapter as usual is on *allopicia*. The chapters on gout and pain of the joints, sciatica, and pain in the back (at fols. 317ra-318rb) are much shorter than *De dolore iuncturarum* in the foregoing *Experimenta*. A chapter, "De sahafati," at fol. 319ra, opens, "Est ex genere apostematum in quibus est foramen parvum . . ." and is only a half column in length.

[7] At fol. 287vb; for the variant readings, *A History of Magic and Experimental Science*, II, 755.

[8] Y is in the top margin of fol. 294r. In the edition of 1481, where the text opening, "Dixit Galienus quod ignis qui descendit . . ." is presented as a distinct treatise, it is immediately followed by the *Secreta ypocratis*, and it by "De aptatione medicine ut sine horribilitate possit sumi secundum Rasim pillule mirabiles," it by "Capitulum de medicinis qui ornant faciem," and it by 5 pp. of Oils.

At fol. 326rb opens the *Antidotarium* of Rasis, "Dixi in hoc libro meo medicinas quarum necessitas est inseparabilis. . . ." After a few lines of text come the table of contents (fol. 326va) and the rubric, "Verba Albuberi de redactione librorum suorum," *incipit*, "Iam quidem pervenimus ad expositionem relationis egritudinum que sunt a summitate capitis usque ad pedes. . . ."

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Latin MS 6902 is a large parchment folio of the 13th century written in double columns. Fols. 1ra-106vb are occupied by the ten books of the *Liber Almansoris* of Rasis. After a rubric six lines in length, the introduction or preface opens, "In hoc meo libro agregabo regi cui benedicat deus. . . ."[9] A Table of chapter headings of the first part or book, "De forma membrorum," follows, then, at fol. 1rb, its text begins, "Creator omnium deus ossa condidit ut per ea corpus sustentaretur. . . ." At 12va, rubric, "Incipit pars secunda de notificatione complexionis corporum et dominis humorum in ipsis . . ." and signs of physiognomy. At 19ra, "Pars 3 . . . scientia virtutis nutrientium et medicinarum simplicium." Passing over books 4, 5, 6, and 7, we come at fol. 73rb to the rubric:

Expleta est pars octava et propter hoc deo qui nos adiuvit gracie sint infinite. Incipit pars ix de egritudinibus omnibus que accidunt a capite ad pedes continens nonaginta quinti(?) capitula.

This is the *Nonus Almansoris* often found separately in the manuscripts and early editions, because much used as a textbook and object of commentaries. Its *incipit* here is, "De cephalea et emigranea. Quando cum istis fuerit rubedo et tensio et gravedo in facie et oculis. . . ." At the end of the tenth and last book we read, "Finis Almansoris. . . . Et sunt capitula totius libri cccxlviii explicit."

As in Latin MS 6893, the *Liber Almansoris* is immediately followed by what are called as before Experiments of Rasis (fol. 106vb, "Incipiunt Experimenta Rasis"), with the same *incipit*—except for "sunt necessaria" in place of "necessaria sunt"—and dealing as it promises with pains in the joints. After a while these as before give way to diseases of boys: fol. 115rb, "de assaphati que accidit pueris," opening, "Assahaphati accidit pueris in facie et capite. . . ." Treatment of this subject ends at

[9] Variant forms of this *incipit* are found in later MSS and printed editions, such as: "In hoc libro meo aggregabo. . . ." Erfurt, Amplonian collection, MS F.291, end of 13th century, fols. 1-45v; "In hoc libro agregabo regi. . . ." Bruges 463, 14th century, fols. 1ra-99ra, and Prague 491, 13-14th century, fols. 1-83v; "In hoc meo libro regi cuius vitam prolonget. . . ." Rhazes, *Opera parva*, Lyons, 1510, fol. 1r.

fol. 117rb with a remedy "quod composuit G. cuidam puero qui paciebatur spasmum in toto corpore." Immediately thereafter we read, "Hic incipit Rasis narrare diversa experimenta que acquesivit," but the next words are: "Dixit G. quod ignis descendit super altare combuxit libros regis. . . ." But the rubric in MS 6893 as to the title and the translators, Johannitius and Franchius, is absent from MS 6902. To the names of the persons from whom Rasis acquired these medical experiments, which have already been noted in *A History of Magic and Experimental Science* (II, 755-6), may be added:

Et Thamor de regione ethica qui fuit ex bonis experimentatoribus habebat bona experimenta experta qui sic custodiebat ea quod nullus in tempore vite sue potuit habere (MS 6902, fol. 117rb; MS 6903, fol. 82va-b)

Medicine Saceron. Iste fuit medicus maximus medicorum grecorum qui habebat experimenta plurima in fine nobilitatis que nos acquisivimus a discipulis eius scilicet Ortaner, Arzeniz, Batroch (MS 6902, fol. 119ra; 6903, fol. 84ra).

Those of Syazarir and Kilatorth are mentioned at fol. 120rb (Kilacor in MS 6903, fol. 84vb). The experimenter of Athens now becomes Chararan or Achararan of the city of Abthor (fol. 120va) and the number of medicines received "from that most noble physician" is stated as six (vi for iii) compound and thirty simple medicines (20 in MS 6903, fol. 85ra). We further hear of "Adezeos greci" (MS 6902, fol. 120vb; 6903, fol. 85rb) and of an electuary of "Zacaron de Babilonia" (6902, fol. 121ra; 6903, fol. 85va), who is perhaps the same as the Saceron above mentioned.

The passage quoted from MS 6893, "Dixit G, iam diximus . . ." now becomes

Dicit Rasis et iam diximus in hoc libro nostro quem vocamus librum experimentationis medicinas quas probavimus et accepimus a sapientibus hominibus habentibus sollicitudinem circa hanc artem (fol. 123v; MS 6903, fol. 87ra).

More like the other's reading is "De aptatione medicine ut sine horribilitate possit sumi pillule mirabiles Rasi" (fol. 123v; MS 6903, fol. 87rb, rubric, "De aptatione medicine secundum Rasim"). As before pills fill several pages (fols. 125rb-127rb). But then, instead of the Secrets of Hippocrates, there is presently the rubric, "De hiis que provocant sompnium," and

Capitulum tercium. Rasis dicit cum essem sollicitus circa medicinam me oportebat vigilare et tam diu feci donec omnino sompno carui (MS 6902, fol. 127va; 6903, 90rb).

Later we read:

Summa istius capituli. Post electionem et nutrimentorum bonitatem et prudenciam scientie apparitionis consideranda est prudencia dispositionis stellarum et lune et temporum coniunctionis communi(?) et considerare in hoc verba Ypo. quando dicit (fol. 128va; 6903, fol. 91ra; 6904, fol. 158vb).

But we have not yet finished with Rasis, by whom a discussion of stone in the kidneys or bladder concludes his Experiments.[10] Its opening and closing words are:

Dicit Rasis de lapide que in renibus generatur (vel) vesica brevem sermonem compendiosum abstractum a naturali perscrutatione . . . / . . . et forte dolor descendet ad inquinem et maxime in descensu lapidis per vias urinales. (fol. 129r-v; MS 6903, fols. 91va-92ra, Expliciunt experimenta Rasis).

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In Latin MS 6903, which we have been collating with 6902 for the *Experimenta*, they similarly follow at fols. 75ra-92ra the *Liber Almansoris*, than which they are written in a different and seemingly older hand. In both these manuscripts, as in MS 6893, the *Divisiones* of Rasis come next. In MS 6903, fols, 92ra-118va, they open and close:

Verba abubacri filii zacarie arazi. Ventilata fuerit in presencia cuiusdam probi viri rememoratio divisionis egritudinum et curationis earum, quare visum est mihi ut componerem librum de hac intentione . . . / . . . que eradicant pannum. Expliciunt divisiones Rasis.

Both manuscripts, like MS 6893, conclude with the *Antidotarium* of Rasis. In MS 6903, at fol. 119ra, after "Capitula antidotarii Rasis," and the rubric, "Verba abubacri filii zacharie arazi," the *incipit* runs, "Dixi in hoc meo libro quare necessitas est inseparabilis et posui illas. . . ." MS 6902, at fol. 165ra, has what also seems a less correct wording than that of MS 6893, "Dixi in hoc meo libro medicinas quarum necessitas est separabilis et posui illas. . . ." In closing, in both 6902 and 6903, Rasis refers the reader for fuller information to his other works

in libro meo magno in arte medicine qui interpretatur alhavy et in libro meo qui est minor isto libro, et fui contentus in eis secundum quod est alma(n)sor quod composui x tractatus et feci ipsum regi Almasori domini corasceni a cuius nomine nominavi librum, et in libro meo edito de virtutibus quem feci ad ely. dominum trabesten et in libro polorum qui est liber maior quem ego composui prope amplavi exponere quem ego explanavi in arte medicine et aduvamento naturarum(?) et que ego didici de scientiis philosophie exceptis hiis que dicemus in libris nostris. . . .

[10] In the edition of 1481, "Capitulum tertium" and "Summa istius capituli" follow discussion of the stone, and both come after the texts mentioned above in note 7. The Secrets of Hippocrates are then repeated without the title or concluding sentence.

The same passage followed the table of chapters in MSS 6893 and 14024. It is presumably someone other than Rasis who adds that for any medicine not mentioned here (i. e. in his *Antidotarium*) one should look "in antidotario humani filii Ysaac et illic invenietur." Hunain ibn Ishak is meant. However, in MS 6893 this remark was headed, "Verba Albuberi."

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In Latin MS 6904 the *Liber Almansoris* in ten books as usual comes first at fols. 1ra-98vb, but then is followed by the *Antidotarium* at fols. 99va-108vb, opening, "Dixi in hoc meo libro agregabo medicinas quarum necessitas est inseparabilis et posui illas que ex eis . . .", and ending with an "Emplastrum ad algebra." Similarly the last chapter heading in MS 6893 was "De algebra. De morbillo crurorum(?)." Next, at fols. 109ra-140vb, the *Divisiones* open and close:

Ventilata fuit in presencia cuiusdam probi viri . . . / . . . et medicine que removent pannum valent ad hoc. Expliciunt divisiones.

Finally, at fol. 141ra, "Incipiunt experimenta. Dicit Rasis hic volo dicere medicinas que sunt necessarie in doloribus iuncturarum. . . ."

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In MS 6906, a parchment codex of the 13-14th century, the order is *Liber Almansoris* without prologue, *Divisiones*, *Antidotarium*, and *Experimenta*, with the last split into three works, on pains of the joints, diseases of boys, and Experiments of Rasis, as the following synopsis will show.

fol. 1r (single column), rubric, "Primum capitulum De collationibus et aggregationibus que sunt premittenda in principio huius artis"; *incipit*, "Creator omnium deus ossa condidit. . . .

fol. 73rb, rubric, "Incipit pars VIIII de curationibus egritudinum que corpore fuerint a capite usque ad pedes. De cephalea et emigranea. Quando cum istis affuerit rubedo intensio et gravedo in facie et oculis. . . ."

fols, 94rb-112vb, Pars X.

fol. 112vb, chapter headings of *Divisiones*.

fol. 113ra, "Incipit liber divisionum Rasis. Verba abubacri filii Zacharie arazi. Ventilata fuit. . . ."
rubric, "Ca. primum de allopicia."
incipit, "Primum itaque ex eis capitulum de allopicia que est casus capillorum et tyria et fit propter flegma salsum adhustum. . . ."

fol. 151va, *Divisiones* end and *Antidotarium* begins with two prefaces opening, "Dixi in hoc meo libro medicinas quarum necessitas est inseparabilis . . ." and "Iam quidem pervenimus ad expositionem relationis egritudinum. . . ."

fols. 151vb-152ra, chapter headings of the *Antidotarium*, ending with, "De morbillis et variolis."

fol. 164rb, "Explicit Antidotarium. Incipit liber de iuncturis," *incipit*, "Dicit Rasis, Volo in hoc capitulo dicere medicinas que sunt necessarie in doloribus iuncturarum. . . ."

fol. 173rb, in the margin, "Explicit de doloribus iuncturarum. Hic incipit practica (changed to particula) puerorum (changed to parve). *Incipit*, "Assahafati accidit pueris et forte accidit in facie et capite. . . ."

fol. 175va, "Explicit practica puerorum. Incipiunt experimenta. Dixit G. quod ignis qui descendit super altare combussit. . . ."

fol. 181va, "Dicit razis et iam diximus in hoc libro nostro quem vocamus librum experimentationis medicinas quas probavi. . . ."

fol. 181vb, "De aptatione medicinarum ut sine horribilitate. . . ."

fol. 188rb, ". . . et maxime in descensu lapidis per vias urinales. Expliciunt experimenta razis."

A vocabulary to fol. 197vd ends the MS.

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Latin MS 7046, a parchment codex of the 13th century, contains other works in addition to those by Rasis. First there are *Flores* from the *Canon* of Avicenna, then at fols. 48rb-54vb, the Secrets of Galen, a work similar to the Experiments of Rasis and also ascribed to Gerard of Cremona as translator: *incipit*, "Verba G' Rogasti me amice Montee ut describerem tibi librum in medicatione egritudinum vel experimentum medicale. . . ." The running head at the top of the pages is "Secreta Galieni."[11] The third item in the manuscript is a *Summa secunda Antidotaria* of Avicenna, of which I know no other manuscript and which here opens and closes:

fols. 55ra-63vb, rubric, "Incipit Summa secunda Antidotaria Avicenne"; *incipit*, "In hac summa afferemus de medicinis compositis illas que sunt magis . . ."; *desinit*, ". . . in oleo nunc ynde in mensura qua involvi potest."

Next texts by Rasis begin with the last five books of the *Liber Almansoris*. The fifth, sixth, and seventh books are marked by the running heads:

Tractatus sanitatis Rasys (to fol. 70r)
Tractatus de decoratione Rasys
Tractatus de venenis Rasys (after fol. 78v).

At the bottom of fol. 86ra the transition from the eighth to ninth book is indicated by a passage similar to that already cited from MS 6902:

[11] I discussed the content of this treatise in *A History of Magic and Experimental Science*, II, 758-61.

rubric, "Expleta est pars octava. Incipit nona nonaginta quinque continens capitula. De curationibus egritudinum accidentium in interioribus corporis a capite usque ad pedes. De cephalea et emigranea"; *incipit*, "Quando rubedo et msio (*sic*) et gravedo in facie et oculis. . . ."

At fol. 101ra *Nonus Almansoris* ends, and the tenth book begins accompanied by a marginal commentary which, however, appears rather sporadically, there being none of it on some pages and only a little on others. It opens, "Febris in duo dividitur genera quorum unum est. . . ." The text ends at fol. 114rb, and fols. 114v-115v are blank.

At fols. 116ra-146rb, "Incipiunt Divisiones Rasis filii Zacharie," with the usual *incipits*. Fols 146v-147v are blank. At fols. 148ra-159ra, the *Antidotarium* has its usual *incipit* and closes, ". . . permisce ea ad invicem deinde bullias ipsum donec inspissetur super ignem deinde repone"; rubric, "Hic finit antidotarium Rasis. Incipit Rasis de iuncturis. Capitulum de divisione doloris iuncturarum." The latter treatise opens and closes:

"Dicit Rasis Volo in hoc capitulo dicere medicinas que sunt irretiti (*sic*) in doloribus iuncturarum scilicet medicinas laxativas que in libris non sunt dicte nec manifeste . . . / . . . ,fol. 166vb) pinguedinis vituli ʒ ii, pinguedinis anguille ʒ ii."

At fols. 167ra-169ra is the *Practica puerorum* with the usual *incipit* and closing with Galen's oil for the boy "qui patiebatur spasmum in toto corpore." This is followed by the rubric, "Capitulum Rasis de aptatione medicinarum laxativarum," and *incipit*, "De aptatione medicine ut sine horribilitate possit sumi secundum Rasi . . ." with recipes following until at the bottom of fol. 169va we reach another heading, "De ornatu faciei," followed by other recipes and with the running head, "Rasis De ornatu." At fol. 170va the rubric, "Exsperimenta Rasis," is followed by the text "Capitulum tercium" etc, which we met in MSS 6902 and 6903, but here is a shorter text. It runs:

Capitulum iii. Rasis dicit, Cum essem sollicitus circa medicinam, oportet me vigilare et tam diu hoc feci donec omnino sompno carui et usus fui rebus diversis que michi nichil profuerunt et non inveni melius quam apponere oleum naribus nenufarinum et lactucas comedere quibus usus fui omni tempore iuventutis mee et senectutis. Sumpsi coctas quibus usus fui contra debilitatem visus et molliciem testiculorum. Et non inveni melius quam comedere passeres et pullos columbarum quo usu rediit visus. Et inveni mirabile oleum post quod non est aliud melius operatione. . . .[13] (He proceeds to detail its constituents).

[13] "Rasis says, Since I was intent on medicine, I had to stay up late, and this went on until I couldn't sleep at all. I tried various things which did not help me, and I found nothing better than to apply oil of coltsfoot to my nostrils and to eat lettuce, which I

In the second column of the same page (170vb) the rubric, "De signis mortalibus," is followed by a paragraph of text opening, "Dicit Ypocras habebam qui conquerebatur de fluxu ventris continuo. . . ." Other paragraphs written in the first person continue until near the bottom of column 171ra, where we find the rubric, "Incipit tractatus qui dicitur Experimenta Rasis et sunt potius Galieni," followed by the familiar *incipit*, "Dixit G. quod ignis qui descendit super altare combussit libros regis. . . ." Thus the aforesaid "Capitulum iii," which in other manuscripts came long after this *incipit*, here precedes it. This was likewise true of "Capitulum Rasis de aptatione medicinarum." Consequently in MS 7046 the passage

Dixit G. itidem et iam diximus in hoc libro nostro quod vocamus librum experimentatoris medicinas quas probavimus et accepimus a sapientibus hominibus . . . (fol. 177ra)

is soon followed by the discussion of the stone

Dicit Rasis de lapide qui in renibus generatur . . . / . . . maxime in descensu lapidis per vias urinales (fols. 177vb-178rb)

and therewith the Experiments of Rasis or Galen appear to end.

Reverting once more to the names of "experimenters" who are cited therein, we find (at fol. 171va) "ab astore experimentatore qui erat in civitate casich," in place of "ab afloĩa experimentatore qui erat de civitate teriste," of the 1481 edition of Rasis, or "ab astarõ experimentatore qui erat de civitate tetith," of MS Arundel 115 in the British Museum.[13] Saceron (173ra) is spelled as in MSS 6902 and 6903; but their "Adezeos greci" becomes "ab ezeos greco" (174va). The physician from whom three compound and thirty simple medicines are taken is now (174rb) "a carabon experimentatore de civitate Athor." Some further citations are:

fol. 172rb, "Medicamentum acastor qui fuit socius a costo et vocabat ipsum electuarium ligni aloes."

fol. 172va, rubric, "Contra morsum scorpionis"; title, "Medicine breves quibus utebatur Casion qui erat ex Armenia interiori."

fol. 173va, "Medicine Azaridon. Iste quamvis non habuerit nomen inter medicos acceptivum, accepi ab eo iiii medicinas nimium expertas."[14]

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have used all through my youth and old age. I took it cooked and have employed it for weak sight and softness of the testicles. And I have not found anything better than eating sparrows and young doves to restore sight. And I discovered a marvelous oil than which there is nothing better. . . ."

[13] *A History of Magic and Experimental Science*, II, 755, note 1.

[14] In the 1481 edition of Rasis this reads: "medicine azaricon. Iste vir quamvis non habuerit nomen inter medicos, recepi tamen ab eo quatuor medicinas nimium expertas."

fol. 173vb, "Medicamentum Geroceon greci. Ab isto viro recepimus vi medicinas expertas." But eleven are then listed and so numbered.[15]

The next item in MS 7046 is introduced by the rubric, "Incipiunt pronostica signa mortis Rasis." It opens and closes:

fol. 178rb-vb, "Quando apparet in VII[a] apostema nigrum in posteriori parte auris, infirmus morietur in xvii diebus . . . / . . . Cuius sudor asellarum fetet pronosticatur lepra."

This *incipit* is a variant form of the tract usually designated as the Secrets of Hippocrates[16] and the closing words are those which in MS 6893 terminated its Secrets of Hippocrates. But the *incipit* of that tract, "Pervenit ad nos quod cum Ypocras appropinquaret morti . . ." forms the opening words of the text which immediately follows in MS 7046 and which concludes at fol. 179rb, ". . . dulcium desiderio vehementi." The explanation is that in 6893 the Secrets followed, and in 7046 precede, the *Capsula eburnea*.[17]

MS 7046 as at present constituted has two treatises by, or extracts from, Rasis which were not included in our other manuscripts. They are on fevers and phlebotomy.

fols. 179va-182ra: rubric, "Incipit tractatus febrium ex libro Rasis"; *incipit*, "Species febrium prime sunt tres; alie enim que sunt in spiritibus sicut febris effimera et alie que sunt in membris radicalibus sicut febris ethica, et tercia fit in

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[15] *Ibid.*, "medicine Gereon greci ab isto viro habuimus xi medicinas experti ad diversas egritudines quas nos probavimus et invenimus ipsas esse mirabiles."

[16] In the (Venice), 1497 *Opera* of Rasis et al. (Hain *13893; Klebs 826.2; IAL R170); copy in British Museum, IB.23388, f. 39va-b, "Gloriosissimi medici Ipocratis pronosticorum liber qui dicitur lber secretorum," the opening words are: "Dixit Ipocras, Cum in somniis apparet apostema nigrum in posteriori parte auris. . . ." This form of the *incipit* occurs also in the Milan, 1481 edition of Rasis, *Opera*, and in MSS Avignon 1019, 13th century, fol. 174r-v, and Erfurt, Amplonian Q. 178, 14th century, fol. 98.

In the 1500(?) edition of Maino de' Maineri, *Regimen sanitatis*, at fol. 105r-v: "Secreta hypocratis feliciter incipiunt," with the opening words, "Dixit Hypocrates quando in die sexta acute egritudinis apparuerit apostema nigrum in posteriori parte auris, morietur in decimaseptima die." See also Munich cod. lat. 640, fols. 12r-14r.

At Rome, MS Angelica 1338 (T. 4. 3), 14th century, fols. 36v-37r, Hippocrates, De morte subita, opening, "Quando iam apparuerit apostema. . . ."

"Quando in facie infirmi fuerit apostema. . . ." Hippocrates, Secreta, see *Archiv für Geschichte der Medizin*, IX, 90.

"Dixit Ypocras. Quando in 7 die apparuerit apostema nigra (*sic*!) in posteriori parte auris morietur in 17 die . . ." is the *incipit* of "Hippocratis . . . de experimentis," in Munich cod. lat. 31. A. D. 1320, fol. 46va-b, while the title, "Hippocratis liber secretorum" is reserved for the text opening, "Pervenit ad nos . . ." at fols. 78vb-79ra.

[17] In the *Opera* of 1481 and 1497 the *Secreta* precede the *Capsula eburnea*. In the latter case the pseudo-Hippocratic tract of astrological medicine comes between them.

humoribus sicut febris putrida . . ."; *desinit*, ". . . que eradicant pannum dolent vestigia eorum"; rubric, "Expletus est tractatus febrium Rasis."

fols. 182rb-183vb: rubric, "Incipit fleobotomia Rasis"; *incipit*, "Vene que ex more in fleobotomia incidi solent sunt. . . ." A text with a similar *incipit*, "Vene que incidi solent in minutione . . ." is ascribed to Rasis in a MS of the 13th century at the British Museum: Sloane 3282, fol. 46—.

After the close of this tract on phlebotomy, a rubric of six verses fills out the last page of the present manuscript. The last two verses,

> Sic odor nardi spirabit sermo Richardi
> Splendet micrologi lux quasi flamma rogi,

suggest that this rubric was connected with a coming work, and a table of contents on the front cover of our manuscript lists the following medical treatises which once continued it, and carried it to over three hundred leaves.

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Ricardi Anglici	
Anatomia	fol. 182 (*sic*)
Signa dierum criticorum	185v
Practica	201
Rogerii cancellarii Montispessulani	
Summa	fol. 219v
Minor Rogerina	256
Summa que dicitur Trotula	258
Minor Trotula	265v
Genecia Cleopatra ad Deodatam	267v
Gilberti cancellarii Montispessulani	
Experimenta	fol. 274
De egritudinibus mulierum	278
Compilatio pulverum siruporum etc.	281
Synonima	300
Nicolai cuiusdam opera	314

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MS 14024 is written on parchment, apparently fairly early in the fourteenth century. It opens with the *Liber Almansoris* (fols. 1ra-105vb) and names Gerard of Cremona as its translator:

fol. 1ra, . . . liber incipit translatus a magistro Gerardo Cremonensi in Toleto de arabico in latinum quod habeo. Masorius vocatus est eo quod regis Mansorii ysaac filii precepto quod edictus sit.

The wording of the *incipit* in this manuscript is

Verba abuberti. In hoc meo libro regi cuius vitam prolonget deus aggregabo. . . .

At the close of the table of contents the total number of chapters is given as 440 (fol. 4rb) instead of 348 as in MS 6902. It is followed at fols. 106ra-112vb by an Arabic-Latin glossary. Fol. 113r-v is devoted to tables of contents of *De doloribus iuncturarum* and *De curis puerorum*, the texts of which follow at fols. 114ra-121va-123va (or an older numbering cx-cxviii). The *Divisiones* follow at fols. 124ra-167rb (but with another older numbering which runs from 1 to 60 for the rest of the MS). The *Divisiones* open and close:

Ventilata fuit in presentia cuiusdam probi viri . . . / . . . et medicine que eradicant pannum delent vestigia earum.

The next treatise, at fols. 167va-180vb, is recognizable from its opening and closing words as the *Antidotarium*. But at its close is written, "Explicit liber divisionum," and again after another vocabulary, fol. 183rb, "Explicit liber divisionum translatus a magistro Girardo Cremonensi de arabico in latinum in civitate Tolleto." Which leaves us in doubt whether the translation of the *Divisiones* or *Antidotarium* or both is being attributed to Gerard. But we note that in this manuscript the treatments of pains in the joints and the diseases of boys are completely disassociated from the Experiments either of Rasis or Galen.

Although in previously mentioned manuscripts we have seen Secrets which were attributed to Galen and Hippocrates closely associated with works of Rasis, we find that title ascribed to him, aside from an alchemical *Liber secretorum*, only in the case of a medical work which in the printed editions of his *Opera* has the alternative title of Aphorisms.[18] However, in another manuscript of the Bibliothèque Nationale, where it is found between the treatise of Ihesu Haly on diseases of the eyes and their cure, and various works of Arnald of Villanova, it is referred to only as *De secretis*.

Ms 17847, 14-15th century, fols. 29ra-41rb: "Incipit liber de secretis medicine secundum Rasim. Et incipit primus tractatus. In nomine domini incipiunt sermones quos abubert Mahomet filius Zacharie alRazi in secretis operum medicine composuit. Inquit Abubert, Congregavi in divisionibus egritudinum et ostendi curas et causarum naturam ex canonibus antiquorum et ex tractatibus et sermonibus secundum possibilitatem meam. . . ."

Presently six sermones are listed; I add the fols. where they start:

[18] In the edition of 1481, where it covers 21 pp., "Liber rasis de secretis in medicina qui liber amphorismorum apellatur."

1 de pronosticis rerum futurarum
2 de experimentis (32ra-
3 de casibus que mihi acciderunt (34va-
4 de dietis et medicinis et cibariis (35va
5 de verbo Ypocratis (37vb
6 de scientiis et intellectibus sine quibus rectus medicus esse non debet (38vb

The 1481 edition adds "et confidentiis" to 2; under 3 has "qui ipsi Rasi" instead of "que mihi"; and under 5 "verbis' 'instead of "verbo."

The first *Sermo* opens:

Incipit liber Rasis de secretis in medicina quem transtulit magister Egidius apud sanctam habenam(?) de verbo primo quod est in prognosticatione rerum futurarum. Inquit a Rasi, Cum in civitate fuerit multitudo nebule cum pluvia permanente. . . .

I have failed to identify this Aegidius; at any rate the translation of this text is not ascribed to Gerard of Cremona.

In seven manuscripts five works of Rasis have been found together. *Liber Almansoris* has always come first; the order of the others—*De doloribus iuncturarum, Practica puerorum, Divisiones* and *Antidotarium*—has varied. Six of the seven manuscripts have also contained the collection of "experiments" which opens, "Dixit G. Ignis qui. . . ." In three of the seven manuscripts "Capitulum tertium" and "De lapide" have been added. It would seem that we have to do with a group of texts which appeared in Latin together and were translated at the same time and place, and by the same man, presumably Gerard of Cremona, working at Toledo.[10]

[10] The same collection of tracts is found in MSS at other libraries, for example, Munich cod. lat. 13114, 13-14th century, fols. 4r-166r, *Liber Almansoris;* 167r-226r, *Divisiones,* 227r-245r, *Antidotarium;* 247r-259, "Experimenta Rasis . . . de passionibus iunctarum," followed by *Practica puerorum;* 263va, "Dixit G. Ignis qui . . ."; 279vb, "Dixit Rasis de lapide qui in renibus vel vesica generatur. . . ."

LINCOLN MEMORABILIA IN THE MEDICAL MUSEUM OF THE ARMED FORCES INSTITUTE OF PATHOLOGY

HELEN R. PURTLE

Although Lincoln memorabilia are displayed in museums in various parts of the country, the relics associated with the assassination of Abraham Lincoln are logically and appropriately housed in the Medical Museum. Since the founding of the Army Medical Museum in 1862, one of its aims has been to collect material of medico-historical importance. And where better to begin than with memorabilia of the man who held the high offices of President of the United States and Commander-in-Chief of the Army during the founding years of the Museum?

Abraham Lincoln, shot on April 14, 1865, was attended in his last hours by Army doctors and by his personal physician, Dr. Robert King Stone; he died on April 15. Among those present were Surgeon General Joseph K. Barnes, Dr. Charles S. Taft, Dr. C. H. Lieberman and Dr. Charles A. Leale, a young Army surgeon, who was in the theater when Lincoln was shot and was the first to reach his side.

Not until some thirty-five years after Lincoln's death, however, were any of the relics relating to the assassination contributed to the Army Medical Museum. The acquisitions now housed here, and on permanent display, comprise the Seward-Barnes Chinese plate, copies of Lincoln's mask and casts of his hands, and clippings of Lincoln's hair from the wound area. In addition, there are either original illustrations or prints of the scenes around the death bed, the bloodstained cuffs of one of the physicians who participated in the autopsy, a copy of Dr. Leale's *Lincoln's Last Hours,* the fatal bullet, fragments of bone, and the probe used in the autopsy. A section of the spinal cord and fragments of vertebrae from the assassin, John Wilkes Booth, are also in the collection.

Seward-Barnes Chinese Plate. At the time that Lincoln was shot, there was a cleverly conceived but clumsily executed plot directed by John Wilkes Booth to murder not only the President but his entire cabinet. George A. Atzerodt was assigned to kill Vice-President Johnson, but lost his courage. When it was learned that General Ulysses S. Grant was to sit in the Presidential box, Lewis Paine, a stalwart young deserter from the Confederate Army, was selected to kill Grant. However, at the last moment he changed his plans and left Washington. Paine was then

assigned to kill William Henry Seward, the Secretary of State. The slaying was scheduled for the same time that Booth was to take Lincoln's life. The attempt on Seward's life was thwarted by a metal brace which he was wearing because of a fractured jaw.

Surgeon General Joseph K. Barnes was called on the night of the 14th of April to treat Mr. Seward. In his testimony for the prosecution on May 19, 1865, Barnes (1) reported that the Secretary was severely wounded "by a gash in the right cheek, which passed around to the angle of the jaw, by a stab in the right neck, and by a stab in the left side of the neck." In appreciation of his services, Seward presented to General Barnes a set of Chinese plates which were made in Canton (or near Canton). One of these plates donated in 1900 to the Army Medical Museum by General Barnes' widow, bears a design of Chinese characters in gold lettering which translated read: "Thanks from Prime Minister Seward to the great American Physician Dr. Barnes." One scene depicts two people at a game, the other is a family scene. In accepting this gift March 14, 1900, General George M. Sternberg wrote to Mrs. Barnes: ". . . This will be of interest as a relic associated with the tragic death of President Lincoln, and will be deposited in the Army Medical Museum as a gift from you and a souvenir of the event referred to, and of the relations of your honored husband to President Lincoln and his distinguished Secretary of State."

The Lincoln Life-Mask and Hands. In February 1942, Avarel Fairbanks, sculptor, offered to make for the Army Medical Museum copies of Lincoln's life mask and hands. These reproductions by Mr. Fairbanks were made from castings loaned to him by Mr. Thomas Starr, President of the Lincoln Club of Detroit. Mr. Starr had made them from the original molds cast by Leonard Volk (2) in 1860, the mask in preparation for a bust and the hands to be used as models for a statue of Lincoln. Fairbanks stated in a personal communication to Colonel J. E. Ash:

> I have seen many reproductions of the Volk mask and hands but in none, before these loaned to me by Mr. Starr, have I seen such details as his had. The wrinkles and even the texture of the quality of Lincoln's face were particularly noticeable. Also the skin folds on the back of the left hand show very prominently. One might question why the skin folds are not as noticeable on the back of the right hand but they would be if in the same position as the left. I have tried holding a stick and bending my wrist in the position of that of Lincoln's hand and I find that the skin becomes stretched. This accounts for the difference which you may notice.

The casts of Lincoln's face and hands made by Volk are in the National Museum in Washington (3). The copies made by Fairbanks are in the Medical Museum, Armed Forces Institute of Pathology.

Lincoln's Hair. A small amount of hair from the area surrounding President Lincoln's wound was removed by Dr. C. H. Liebermann, one of the surgeons in attendance at the bedside, and given by him to Surgeon General Joseph K. Barnes. Dr. Stone, who presided at the autopsy, presented a lock of hair to Mrs. Lincoln, at her request, and to each of the surgeons present at the autopsy. Hair from the wound area was later contributed to the Museum; one lock by Mrs. Barnes, another by Mrs. George M. Sternberg.

Sketch of the Death-Bed Scene of Abraham Lincoln (Fig. 1). In 1933 Dr. Samuel B. Sturgis contributed the original sketch of the death-bed scene drawn by Hermann Faber, a medical artist on duty at the Army Medical Museum, accompanied by an affidavit by Erwin Faber:

> This sketch of the death-bed of Abraham Lincoln, was made by my father, Mr. Hermann Faber, then Hospital Steward, attached to the Surgeon General's Department, Washington, D. C., directly under Generals Barnes and Woodward, (Ed. note—Woodward was an Assistant Surgeon, U. S. A., not a general.), as artist to illustrate the Medical War Record. Immediately after the removal of President Lincoln's body, Mr. Faber entered the house and room in which he died. Nothing had been disturbed, the bed, chairs, etc., were still in place. This sketch was immediately shown to Dr. Woodward who gave all the detail of the positions of those present at the time of the demise of Lincoln. Doctors Woodward and Barnes both approved of this drawing as to its correctness and accuracy. It is without doubt the first and only sketch made at that time. He (Faber) also removed the blood-stained pillow case, a piece of which is in the collection at the College of Physicians in Philadelphia.

In spite of Mr. Faber's positive statement about his father's sketch of the death-bed scene, other drawings were made about the same time, among them one by Albert Berghaus, which appeared in Frank Leslie's *Illustrated Weekly,* April 29, 1865, another by Litchfield, which appeared in *Harper's Weekly,* May 6, 1865, and still another by Major A. N. Rockwell. Copies of these have been obtained recently for the archives of the Medical Museum.

Lincoln's Last Hours. In November 1951 Mrs. James Harper deposited in the Medical Museum, in addition to other family memorabilia, a booklet *Lincoln's Last Hours* written by her grandfather, Dr. Charles A. Leale, the first physician to reach President Lincoln after the fatal shooting. It was Dr. Leale's diagnosis and prognosis, "His wound is mortal; it is impossible for him to recover," that was telegraphed over the world, and his treatment, according to his account, that prolonged the life of the President until shortly after seven o'clock the next morning; Dr. Leale remained with the President until he died.

FIG. 1. Sketch of death-bed scene, by Hermann Faber. Persons around Lincoln who can be identified: 1. Gideon Welles, Sec. of Navy, 2. Salmon P. Chase, Sec. of Treasury, 3. Dr. Robert King Stone, Lincoln's personal physician, 4. Chas. Sumner, U. S. Senator, 5. Dr. Chas. H. Crane, Asst. Surg. Gen., 6. Dr. Jos. K. Barnes, Surg. Gen., 7. Henry W. Halleck, Maj. Gen., 8. Edwin McMasters Stanton, Sec. of War.

Bloodstained Cuffs. Mr. Bridgham Curtis sent a letter to the Office of the Surgeon General on August 6, 1947, asking if the Army Medical Museum would care to accept two relics of the autopsy performed on Lincoln by his father, Dr. Edward Curtis, and Dr. J. J. Woodward, Assistant Surgeons, U. S. A., the latter assigned to duty at the Army Medical Museum. These relics, the bloodstained cuffs of the undershirt Dr. Curtis was wearing at the time of the autopsy, and a splinter of skull bone from the fatal wound area were received in the Museum on September 12, 1947, accompanied by a sworn affidavit dated May 11, 1926, signed by Dr. Curtis' widow, Mrs Augusta L. Curtis.

The affidavit itself contains some facts of pertinent historical interest:

Augusta L. Curtis, being duly sworn, deposes and says: I am the widow of the late Edward Curtis, M. D. who died in New York City on November 28, 1912;

I was married to Dr. Curtis on November 16, 1864;

During the Civil War, Dr. Edward Curtis was an Assistant-Surgeon in the Medical Corps of the U. S. Army and at the time of Lincoln's assassination was stationed in Washington and was on duty in the office of the Surgeon General.

After Lincoln's death and on April 15, 1865, Dr. Curtis and Dr. J. Janvier Woodward, who was also in the Medical Corps of the Army, at the direction of the Surgeon General of the U. S. Army, performed an autopsy on the body of the President.

A brief account of the autopsy with a note of the results was published in the New York Times for Monday, April 17, 1865. Dr. Curtis also wrote an account of the autopsy which was published in the New York Sun for Sunday, April 12, 1903.

At the time the autopsy was performed we were living at a boarding house in Washington situated on the first block of Vermont Avenue just off from Lafayette Square to the North. When Dr. Curtis returned from the autopsy and was changing his clothes he found that a few drops of the President's blood had stained the cuffs of his shirt and showed them to me. I thereupon cut the cuffs from the shirt and put them away in an envelope which has been in my possession ever since. On this envelope Dr. Curtis endorsed in his handwriting the following:

> Shirt sleeves soiled with the blood of
> President Abraham Lincoln at the autopsy
> on his body April 15, 1865.
> Edward Curtis, Asst. Surg. U. S. A.

At the same time, to-wit, April 15, 1865, while Dr. Curtis in my presence was cleaning his surgical instruments which he had used to perform the autopsy he found on one of them and showed to me a tiny splinter of bone from President Lincoln's head, which, he said, had evidently been driven into the brain by the bullet, and which had adhered to the surgical instrument. Dr. Curtis wrapped this splinter of bone in my presence in a small piece of writing paper and endorsed thereon in his handwriting the following:

Splinter of bone from skull of Abraham Lincoln

. . . I have this day, May 11, 1926, again shown the said splinter of bone and the said letter of May 17, 1865, and the said cuffs and said endorsed envelope to my son Bridgham Curtis, and have directed him to place and keep the same with this affidavit for the purpose of verification and identification.

The Bullet that Killed Lincoln. Dr. Stone (4) was given permission to conduct the postmortem examination, and of this he has written: ". . . previous to the process of embalment, I proceeded to the autopsy of our late President, having requested my friends Assistant Surgeons J. Janvier Woodward and Curtis, U. S. A. to be present and as skillful and tried anatomists to conduct the examination. There were present Surgeon General Barnes, U. S. A., Dr. Crane, U. S. A., and Dr. Taft, U. S. A.," and a number of other physicians (5).

Benn Pitman, Recorder for the Commission, a military body appointed to conduct the trial of the conspirators, states that Dr. Robert King Stone gave the following testimony for the prosecution (6):

. . . an examination (postmortem) was made in the presence of Surgeon General Barnes, Dr. Curtis and Dr. Woodward of the Army. We traced the wound through the brain, and the ball was found in the anterior part of the same side of the brain, the left side (7); it was a large ball, resembling those which are shot from the pistol known as the Derringer; an unusually large ball—that is, larger than those used in the ordinary pocket revolvers. It was a leaden hand-made ball, and was flattened somewhat in its passage through the skull, and a portion had been cut off in going through the bone. I marked the ball "A. L.", the initials of the late President, and in the presence of the Secretary of War, in his office, enclosed it in an envelope, sealed it with my private seal, and indorsed it with my name. The Secretary enclosed it in another envelope, which he endorsed in like manner, and sealed with his private seal. It was left in his custody, and he ordered it to be placed among the archives of his department.

(An official envelope, sealed with the official seal of the Secretary of War, was here opened by the Judge Advocate in the presence of the witness, from which was taken a Derringer pistol and an envelope containing a leaden ball in *two* pieces.)

This is the ball which I extracted from the head of the President; I recognize it from the mark which I put upon it with my pen-knife, as well as from the shape of the ball. This smaller piece is the fragment which was cut off in its passage through the skull. The ball was flattened, as I have before described.

The bullet, together with several fragments of bone removed from Lincoln's skull, and the probe used to remove the bullet were transferred to the Medical Museum by the Lincoln Museum of the National Capital Park Service on June 20, 1956. These objects had been in the Judge Advocate's Office, War Department, until February 5, 1940, when they were transferred to the Lincoln Museum. As the bullet had never

been on display prior to its receipt in the Medical Museum, it is quite possible that many believe it was buried with Lincoln.

The bullet is 43.75 mm. and is described as exceedingly hard lead, made of britannia metal—a mixture of antimony, tin and copper and soft lead. Although the discovery of the bullet has been described by others, Dr. Edward Curtis' (8) statement is perhaps most dramatic:

> . . . an examination is instituted and there is laid bare what a few short hours since was the fountainhead of a wit and a wisdom that could save a nation. The part is lifted from its seat, when suddenly, from out a cruel vent that traverses it from end to end, through these very fingers there slips a something hard—slips and falls with a metal's mocking clatter into a basin set beneath. The search is satisfied; a little pellet of lead.

On 29 April 1865, Surgeon General Joseph K. Barnes deposited in the Medical Museum a portion of the spinal cord and a section of the 3rd, 4th and 5th cervical vertebrae which were removed at autopsy from the body of the assassin, John Wilkes Booth (9). The spinal cord was perforated from right to left and the laminae of the 4th and 5th vertebrae were fractured by a conoidal pistol ball, fired at a distance of a few yards. Booth died two hours after the injury.

These relics pertaining to the assassination of President Abraham Lincoln have been incorporated in an exhibit which is on permanent display in the Medical Museum.

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NOTES AND COMMENTS

DID VESALIUS SUFFER FROM PEPTIC ULCER?

JOSHUA O. LEIBOWITZ

Vesalius' works contain many digressions which shed light on his biography. They are mostly very short; still they are important enough to be mentioned when some notion of the author's personality can be derived from them.

Some of the digressions concern certain persons who, like Valverde,[1] are often vehemently criticized according to the emotional style of the Renaissance. Other persons, even though not well known, are mentioned with high praise at some length, as is the case with the professor of philosophy, Marcus Antonius Genua,[2] or Wolphangus Herwort, an Augsburg patrician.[3] The great Vesalius scholar, M. Roth,[4] was not able to find anything about Herwart, though Wolfgang Herwart is mentioned in Zedler's *Lexicon*.[5] Vesalius was in Augsburg where he accompanied Charles V from July 1547 till August 1548. The mentioning of Herwart shows the friendly relations Vesalius maintained with the Augsburg patrician to break the monotony of his court service.

From other short digressions, not usual in a modern scientific work, we learn who the friends of Vesalius were: Joh. Dryander of Marburg,[6] Leonard Fuchs of Tuebingen,[7] Lazarus de Frigeis,[8] the Jewish physician who helped him to insert the Hebrew equivalents at the end of the first part of the *Fabrica*.[9]

Since the *Fabrica* was not conceived as a textbook of anatomy, we find

[1] A. Vesalius, *Anatomicarum Gabrielis Falloppii observationum examen*, Venice, 1564, pp. 72-73.

[2] A. Vesalius, *De humani corporis fabrica libri septem*, Basel, 1543, I, 8, p. 35.

[3] *Ibid.* "Herwort" is Vesalius's spelling of the name.

[4] M. Roth, *Andreas Vesalius Bruxellensis*, Berlin, 1892, p. 121, note 3.

[5] Johann Heinrich Zedler, *Grosses Universal-Lexicon*, vol. XI, Halle and Leipzig, 1735, col. 1860.

[6] *Fabrica*, V, 4; p. 495.

[7] *Fabrica*, letter to Oporinus.

[8] S. Franco, Ricerche su Lazaro ebreo de Frigeis medico insigne e amico intimo di André Vésal, *La Rassegna mensile di Israel*, 1949, *15*: 495-515 [Roma].

[9] *Fabrica*, pp. 166-168.

there not only physiological discussions, but also references to morbid anatomy as well as clinical data. Much pathology is to be found in the chapter on the spleen.[10] This material has not yet been elaborated.

Due to this elastic approach of Vesalius to the writing of the *Fabrica*, a few autobiographical details emerge. For instance, when describing the superstitious custom of some mothers to preserve the involucrum (fetal membranes) of the new -born, Vesalius adds: "as I have seen my dearest mother do."[11] And there is a passage in which Vesalius refers very briefly to his own physical constitution and ailments. It occurs in the chapter on the gall bladder and reads:[12]

> The end of the duodenum is so far removed from the stomach that it rarely happens that the bile ascends upwards into the stomach from the intestines. Yet persons with a bilious disposition, indeed, may be familiar with this, as often as their stomach, being empty a little longer [than usual], is tortured (as I myself also experience at times).

This passage is important on account of Vesalius' autobiographical remark. Generally, great care must be taken when a correlation of clinical entities in the older literature to present-day knowledge is attempted. However, Vesalius seems to indicate that when his stomach remained empty for any length of time he sometimes experienced torment. Hunger pain is nowadays usually ascribed to the condition of peptic ulcer. When localized in the duodenal bulb the ulcer may produce intermittent pain so that usually periods of relative comfort and pain alternate. The word "nonnunquam" (at times) may thus fit into the clinical picture. Although peptic ulcer may occur at any age, the first symptoms more often appear early than late in life. Vesalius was 28 years old when he finished the *Fabrica* and had been living under great strain. According to Roth[13] he began, after many preliminaries, to write down the *Fabrica* in 1540, and his great work was completed on August 1, 1542, along with the *Epitome* on August 13. Thus he had indeed spent two strenuous years. Moreover, Vesalius' mind was divided between adherence to antiquity and the creation of the new science. He did not break with antiquity as

[10] *Fabrica*, V, 9; p. 512. See also Ch. D. O'Malley and J. B. de C. M. Saunders, Vesalius as a clinician, *Bull. Hist. Med.*, 1943, *14*: 594-608 (p. 600).

[11] *Fabrica*, V, 17, p. 543.

[12] *Fabrica*, V, 8; p. 511: "Duodeni autem terminus tantum a ventriculo removetur, ut rarius bilem in ventriculum ex intestinis sursum conscendere contigat. Quanquam et id biliosis naturis familiare sit, quoties his ieiunus venter paulo diutius (ut ipse quoque nonnunquam experior) torquetur." See also Roth, *op. cit.* p. 190.

[13] Roth, *op. cit.* p. 114.

Paracelsus did. On the contrary, he was a "practising" humanist[14] who cherished the legacy of Alexandria. His attitude toward Galen was ambivalent. He worked on the Giunta edition of Galen's works, adopted much of Galen's system when nothing better was available, and yet was the man who pulled Galen from his throne. Even the title, *De humani corporis fabrica* includes both tribute and challenge: the word "fabrica" is reminiscent of Galen's *De "usu" partium*, while the word "humani" is a stern protest against Galen's animal anatomy and a glorification of human dissection.

As to the alleged association between hunger pain and pathology of the bile, attention may be drawn to a similar thought adopted by Vesalius' contemporary, Amatus Lusitanus.[15] The excessive hunger pain (*fames canina*) was explained by Amatus too on the supposition of biliary disorders. The present writer,[16] however, was able to show, on the basis of the symptoms and the clinical course, that Amatus' patient in all probability suffered from duodenal or pyloric ulcer.

In Vesalius' time no knowledge of peptic ulcer as a morbid entity was available. The first post mortem demonstration of this disease seems to be that by Marcello Donato in 1586. The hunger pain as a more or less pathognomic symptom was described, apparently for the first time, by John Abercrombie[17] in 1828: "Pain begins about the time when the food is passing out of the stomach, or from two to four hours after a meal."

Should the supposition of Vesalius as suffering from peptic ulcer appear acceptable, it may provide a new approach to the explanation of some of his psychological features. The newer concept of this disease as a psychosomatic condition is gaining evidence and recognition. The present writer[18] was able, as early as 1929, to show the psychological conditioning of peptic ulcer, though he would not accept an exclusively psychological approach to this organic disease.

The present study has been made from the internist's point of view

[14] L. Edelstein, Andreas Vesalius, the humanist, *Bull. Hist. Med.*, 1943, *14*: 547-561.

[15] Amatus Lusitanus, *Curationum medicinalium centuriae IV*, Basel, 1556, centuria 4, curatio 42.

[16] Joshua O. Leibowitz, A probable case of peptic ulcer as described by Amatus Lusitanus (1556), *Bull. Hist. Med.*, 1953, *27*: 212-216.

[17] John Abercrombie, *Pathological and practical researches on diseases of the stomach, the intestinal canal, the liver, and other viscera of the abdomen*, Edinburgh, 1828. Copy used: third American edition, Philadelphia, 1838, p. 93.

[18] J. O. Leibowitz, Ulcus ventriculi und Psychotherapie, *Der Nervenarst*, 1929, *2*: 6.

and may supplement G. Zilboorg's[19] papers which were written as a psychiatrist's interpretation. Vesalius' emotional instability in burning his manuscripts, his sudden retirement at the age of thirty from teaching and scientific activities, and his unexplained departure from Madrid for the Holy Land could be seen as the effects of a psychosomatic condition. Concerning Vesalius' untimely death on the isle of Zante we are in possession of vague and contradictory information recently revised by O'Malley and by Sarton.[20] The probable exacerbation of a peptic ulcer through poor diet and exhaustion during the voyage could be suggested as another possible factor. However, all these conjectures seem to be hypothetical; further search for proof besides the evidence from the *Fabrica* is needed.

[19] G. Zilboorg, Psychological sidelights on Andreas Vesalius, *Bull. Hist. Med.*, 1943, *14*: 562-575. Also: Andreas Vesalius, Psychologische Streiflichter, *Schweiz. med. Wschr.*, 1950, *80*: 234-238.

[20] C. D. O'Malley, Andreas Vesalius' pilgrimage, *Isis*, 1954, *45*: 138-144; G. Sarton, Death and Burial of Vesalius, *Isis*, 1954, *45*: 131-137.

MEDICO-HISTORICAL NEWS AND ACTIVITIES

CORRESPONDENCE AND REPORTS

ON DR. PAUL DELAUNAY'S 80TH BIRTHDAY

All those who have derived ample information and enjoyment from his works, will greet with gratitude Dr. Paul Delaunay's 80th birthday on Febr. 16, 1958. Dr. Delaunay is probably the last survivor of the brilliant group which, in 1902, founded the French Society of Medical History. This modest small town practitioner is the Nestor and one of the most eminent of France's living historians of medicine and biology.

Born at Mayenne (Mayenne) on Febr. 16, 1878, Paul-Marie Delaunay studied medicine in Paris, was Interne in several Paris hospitals from 1900 to 1905, and has practiced medicine in Le Mans (Sarthe) ever since, except for the years of the first world war, which he spent as a medical officer in the front lines (Croix de guerre 1918).

Dr. Delaunay, who published his first medicohistorical paper in Janus in 1901, has studied the history of personalities as well as of institutions and ideas. Some of his books have become classics, like his 1905 Paris doctoral thesis *"Le Monde Médical Parisien au XVIII^e Siècle"* (Paris 1906), his *"La Maternité de Paris 1625-1907"* (Paris 1909), *"Pierre Belon Naturaliste"* (Le Mans 1926), *"La Vie Médicale au XVI^e, XVII^e et XVIII^e Siècles"* (Paris 1935), *"La Médecine et l'Eglise"* (Paris 1948).

He has devoted particular attention to the medical history of his home province. A number of these studies have been gathered together in book form, like *"Vieux Médecins Mayennais"* (2 volumes, Paris 1903 and Laval 1904), *"Vieux Médecins Sarthois"* (3 volumes, Paris 1906, Le Mans 1912, Le Mans 1922), *"Etudes sur l'Hygiène, l'Assistance et les Secours Publiques dans le Maine"* (2 volumes, Le Mans 1920 and 1923).

Dr. Delaunay's interest in the 16th and 18th centuries should not make us forget another group of very valuable contributions dealing with French medicine in the first half of the 19th century. We mention here only his *"Les Médecins, la Restauration et la Révolution de 1830"* (1932), *"D'une Révolution à l'Autre. L'Evolution des Théories et de la Pratique Médicales 1789-1849"* (Paris 1949), and the two volumes of collected papers *"Etudes d'Histoire et de Biographie Médicales"* (Le Mans 1929 and 1932).

It is impossible in this short note to do full justice to the extensive work of Dr. Delaunay, which is truly impressive. He has worked not only in the field of the history of medicine, but also in that of biology (he, himself, started out as a biologist) and pharmacy, not to speak of his clinical, bibliographical, and archeological papers. All publications of Dr. Delaunay show evidence of his extraordinary erudition and his philosophical thoughtfulness, enlivened by his wit and graceful style.

Dr. Delaunay has always been most kind and helpful to individual researchers. He has also generously collaborated in societies like the above mentioned French society for the history of medicine, and his local medical society and academy of arts and sciences. He was a founding member of the Société de l'Histoire de la Pharmacie (1913) and the Société Internationale de l'Histoire de la Médecine (1921). He is a member of the International Academy of the History of Sciences (1929), an honorary Fellow of the Royal Society of Medicine of London (1940), and an honorary member of the medico-historical section of the Swedish Medical Society (1943).

All friends of medical history and of Dr. Delaunay hope and wish that he may spend many more enjoyable and productive years in the midst of his devoted and faithful family.

ERWIN H. ACKERKNECHT

Editorial Note: This tribute was already printed when Dr. Ackerknecht sent the sad news of Dr. Delaunay's death on February 3, 1958, thirteen days before his birthday.

NEW HALL OF HEALTH AT THE SMITHSONIAN INSTITUTION

The new Hall of Health in the U. S. National Museum was opened to the public by the Smithsonian Institution on November 3, 1957. The Hall's primary function is to present basic information on human anatomy and physiology to the layman. To this end there are exhibits on embryology, birth and growth, and on the skeletal, muscular, cardiovascular, digestive, respiratory, endocrine, and nervous systems. The central feature of the Hall is a transparent woman which demonstrates the location and explains the function of the major organs of the body. However, in keeping with its theme, "Through the ages, man's knowledge of his body," the Hall of Health also includes five historical panels showing by means of models and illustrations reproduced from medieval manuscripts and the works of Vesalius, Harvey, da Vinci, and others, the growth of anatomical and physiological knowledge. Thus the visitor may learn something of the long history of the development of human biological science.

The Hall of Health itself represents an example of the historical evolution of health education. Discussions at the annual meeting of the National Health Council in January, 1922, led to the formation of a National Committee on Exhibits Showing Advances in Sanitary Science for the purpose of developing a permanent health exhibit in Washington. In cooperation with the Division of Medicine and Public Health of the Smithsonian Institution, the Committee gathered material from a number of different organizations illustrating the history of man's knowledge of disease, and existing current knowledge of environmental sanitation and personal hygiene. As a permanent exhibit, this old Hall of Health was for its day a pioneer, previous ones having been largely limited to expositions and fairs. It was also pertinent, since in 1924, when the gallery opened, typhoid fever and other diseases resulting primarily from contaminated milk and water supplies and insanitary disposal of wastes were still far too prevalent in the United States.

By the 1940's, this old Hall was out of date. The exhibit techniques used in it had been superseded by more modern ones, and the information presented was no longer geared to the most important educational functions of a health museum.

Once a pioneer, the Smithsonian Institution had in this respect fallen behind. Consequently the old Hall was closed early in the 1950's, and the new Hall of Health has been created as its replacement.

Of particular interest to medical historians is the fact that the new Hall does not replace but rather supplements the existing Smithsonian exhibits relating to the history of medical, dental, and pharmaceutical instruments and technology. Neighboring galleries will continue to exhibit the X-ray tubes, stethoscopes, sphygmomanometers, electrocardiographs, surgical instruments, apothecaries' balances, drug jars, and other historic specimens which are now there. In the future, moreover, these sections will in turn be renovated, in preparation for the Halls of Medical History and Pharmaceutical History which are to be included in the new Museum of History and Technology that is to be built in Washington within the next few years. Planning for these new Halls is now going forward actively. In order that they may present the history of medicine to the public in as interesting, educational, and accurate a manner as possible and in a manner that will do justice to the medical profession, the National Museum's collections of representative medical, surgical, dental, and pharmaceutical instruments, devices, and equipment should be augmented. Physicians and others who have appropriate material that they might wish to donate to the National Museum are urged to write describing their historical objects to either Mr. George B. Griffenhagen (pharmaceutical history) or Dr. John B. Blake (medical and dental history), Division of Medical Sciences, Smithsonian Institution, Washington 25, D. C.

CORRECTION

By an oversight, some legends in figs. 5 and 7 of the article "An Exhibition on the History of Cardiovascular Sound Including the Evolution of the Stethoscope" in the September-October, 1957, issue of the *Bulletin* (vol. 31, pp. 463-487) were wrongly placed. The legends should read as follows:

Fig. 5 (left): "*Above*: Bouillaud *Below*: Hope"
(right): "*Above*: Fauvel *Below*: Hope's own drawing" etc.
Fig. 7 (left): "*Above*: Austin Flint *Below*: Carey Coombs
Courtesy of Dr. John Cosh, Bristol"
(right): "*Above*: Graham Steell *Below*: James Mackenzie"
Courtesy of Dr. A. Morgan
Jones, Manchester

VICTOR A. MCKUSICK

ANNOUNCEMENTS

AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE, INC.

Members of the Association are informed that in accordance with the vote at the last annual meeting directing the appointment of a committee of incorporation, a Certificate of Incorporation of American Association for the History of Medicine, Inc. was filed with the State of New York, Department of State, on January 27, 1958.

JOHN B. BLAKE, *Secretary-Treasurer*

THIRTY-FIRST ANNUAL MEETING, MAY 22-24, 1958

The Thirty-First Annual Meeting of the American Association for the History of Medicine, Inc. will be held in New York City, May 22-24, 1958. The Association's hosts will be The New York Academy of Medicine and The Rockefeller Institute for Medical Research.

Members who may wish to submit papers for the consideration of the Program Committee are requested to communicate with the Chairman of the Committee: Dr. Iago Galdston, The New York Academy of Medicine, 2 East 103 Street, New York 29, N. Y.

Those submitting papers should send, preferably, the full text of their communication, or a full abstract of not less than 500 words. No paper submitted by title only will be considered.

NATIONAL NEWS

American Academy of the History of Dentistry

At the meeting of the Academy in Miami Beach, November 1, 1957, C. Willard Camalier was installed as President and Robert Thoburn was chosen President-elect. The following were re-elected: Harold L. Faggart, Vice-President; Milton B. Asbell, Secretary-Treasurer; and G. B. Denton, Editor.

The Academy adopted a resolution requesting that the Council on Dental Education of the American Dental Association consider the importance of dental history in the curriculum of dental schools and encourage its teaching in the dental schools.

Ohio Academy of the History of Medicine

The annual meeting of the Ohio Academy of the History of Medicine will take place at 10 A. M. on Saturday, April 26, 1958, at the Taft Museum in Cincinnati. Applications for presentation of papers to be sent to Dr. Leon Goldman, Carew Tower, Cincinnati 2, Ohio.

To interest senior medical students in the history of medicine, a prize essay contest will be open to the senior medical students in Ohio. The prize will be $50.00 and the subject may be on any phase of the history of medicine. Essays in triplicate are to be sent to Dr. George Schwemlein, 19 W. 7th St., Cincinnati 2, Ohio.

PROGRAMS OF MEETINGS

Benjamin Waterhouse Medical History Society

January 20, 1958: "Syphilis—A Rehash of Some Historical Aspects," Bernard Appel. Discussor: Herbert Mescon.

February 17, 1958: "The History and Development of Chinese Medicine," Jerome D. Waye.

College of Physicians of Philadelphia, Section on Medical History

January 21, 1958: "The Medical Societies and Women Physicians," Catharine Macfarlane; "The Evolution of Plastic Surgery," Alma Dea Morani; "Immunization—Eighteenth Versus Twentieth Century," Janet Parker and Elsa Kertesz.

This is the third in a series of five programs to be presented by the Philadelphia Schools of Medicine.

The New York Academy of Medicine, Section on Historical and Cultural Medicine

January 22, 1958: Symposium on "The Significance to Medical History of the Newly Discovered Fourth Century Roman Fresco." Speakers: Curt Proskauer, George W. Corner, Loren MacKinney, Rosalie B. Green, A. Hyatt Mayor, Frederick A. Mettler, Meyer Schapiro. An exhibit will be on display at the Academy.

Society of Medical History of Chicago

January 15, 1958: "Siamese Twins," Lester R. Dragstedt; "Cotton Mather, Colonial Theologian and Physician," Alan Richardson.

February 12, 1958: "Stephen Hales, Parson—Physiologist," Kathleen Worst; "Henri de Mondeville, Revolutionary, Iconoclast, Idealist and Surgeon," Leo M. Zimmerman.

NEWS FROM ABROAD

International Congress of the History of Medicine

The Sixteenth International Congress of the History of Medicine will take place at the School of Medicine of Montpellier (France) from Monday, September 22 to Sunday, September 28, 1958, under the general presidency of the dean of the faculty, Monsieur le doyen Giraud.

Registrations will be accepted by Professor Turchini, chairman of the committee of organization, Faculty of Medicine, Montpellier (Hérault, France).

The subjects on the agenda are:

1. The relations of the School of Montpellier with the medical institutions of other nations in course of the centuries.
2. The history and development of the hospital institutions.
3. Medical iconography in the seventeenth century.
4. The contribution of the new world to therapy.

Registration fees are:

4000 francs for members of the International Society of the History of Medicine.
6000 francs for non-members.
3500 francs for accompanying persons.

The *Comité d'organisation* is now accepting titles of papers for presentation together with a short résumé.

BOOK REVIEWS

REINHOLD F. G. MÜLLER. *Grundsätze altindischer Medizin.* Kopenhagen: Munksgaard, 1951. (*Acta historica scientiarum naturalium et medicinalium*, vol. 8). 163 pp. Ill. $4.00.

In view of the dearth of writings on the medicine of ancient India, a new publication in this field is welcome, particularly if it stems from an authority such as Professor Müller. It was therefore with great anticipation that this reviewer undertook the reading of the "Principles of Ancient Indian Medicine." The Table of Contents promised a text of unusual interest since the chapters deal with such topics as, the relationship between priestly and lay physicians, the "Triad of the Ancients," and the fusion of Vedic medicine with the less ancient medical works. They deal further with ideas of sensory perception in the early Aryan period; the doctrines of the tastes and of the wind; and they describe the concepts of space and time and, finally, of the soul.

The pleasure of reading this book was tempered, however, by its cumbersome style which seriously obscures its meaning. Even a reader who is completely familiar with scholarly German writing must be somewhat baffled by a sentence that reads: "Als Grundsätze aus und zu altindischer Medizin werden nachfolgend einige bedeutende Ausrichtungen nach ihren 'Grundlagen' entwickelt, und zwar vorzüglich in absichtlich beschreibender Form zu inhaltlichen Auflösungen ohne Wertungen oder weitergreifenden kritischen Schlüssen aus der unmittelbaren Sachlage der Originalüberlieferungen, etwa für je ein Beispiel zu vorliegender Aufgabe."

In addition to the stylistic handicap there is another obstacle to full comprehension by any but the completely initiated. The author presupposes a verbatim familiarity with the Sanskrit texts which form the basis of his discussion. The points in question are referred to but rarely quoted and hence the reader is compelled personally to consult a great deal of source material in order to derive profit from Professor Müller's work. If this is done, however, the profit achieved is definitely worth the effort. Effective editorial consultation might have obviated many of the above mentioned shortcomings.

In justice to the author, there can be little doubt that some of the obscurity is also inherent in the subject matter itself. It is almost impossible to assign valid dates to any event in Indian history. The Aryan immigration into India has been placed in widely different periods and the time of origin of Vedic medicine is quite unknown. Even the famous Indian medical writings by the "Triad of the Ancients" Charaka, Sushruta, and Vāgbhata, are practically undateable. Indeed, renowned scholars such as Haas and Hoernle have differed by 2,000 years in dating Sushruta's surgical text as of the 14th Century A. D. and the 6th Century B. C. respectively. Dr. Müller refrains almost completely from any attempt at dating these works, although he is more inclined to agree with Haas than with Hoernle. Moreover, except for Vāgbhata whom he places tentatively in the 7th

century he seems inclined to doubt the historicity of the two other great physicians and considers them legendary figures. He suggests that Sushruta, who began to assume a historical personality in the 11th to 13th centuries may have been created on the basis of foreign influence since it appears quite improbable that the field of surgery could have arisen out of purely Indian thought. Charaka, whom the Indians venerate as their oldest physician, is often associated with Vedic times. This, according to Dr. Müller, is in keeping with the tendency to move the beginning of scientific medicine back into the remotest past.

The author feels certain that the three works attributed to the authorship of the Great Triad were not written by those individuals but are collections of much older writings, often of Vedic origin. He points out that the Vedic, i. e. religious tenor, is strongly manifest in the later medical texts where it becomes evident that there never arose any schism between the religious and the professional healer although occasional priestly voices expressed doubts as to the ritual purity of the profane physician.

In Sushruta Dr. Müller points to the story of a prince who was tended by the "scientific" physician with healing potions and at the same time by the priest with healing songs. Such close collaboration of the court priest with the court physician is of considerable antiquity and led to the advice that the enlightened doctor should always consult a priest. In discussing Charaka, Dr. Müller makes us even more aware of the extent to which the practice of medicine was rooted in priestly usages. For in this text the physician recommended priestly songs before undertaking his treatment, the priest was invited to stand next to the doctor throughout the treatment itself, and songs to the Gods were to follow in order to protect all parts of the patient's body from evil.

In his chapter on the five tastes, Dr. Müller analyzes the often raised question concerning the possible influence of Greek humoral thought on Indian medical thinking. He feels, however, that the nature as well as the number of the three Indian humors: bile, blood, and wind, make such a transfer unlikely. On the other hand, he discards entirely the belief expressed by many Indians that the ancient Greeks adopted their humoral system.

These are but a few of the thoughts that emerge from a careful reading of Dr. Müller's work. In spite of its arduous aspects, it is indispensable to those engaged in the study of medicine of ancient India and its copious notes are an additional source of valuable information.

Ilza Veith

GUSTAV SCHERZ, *Vom Wege Niels Stensens. Kopenhagen*: Munksgaard, 1956. (*Acta historica scientiarum naturalium et medicinalium*, vol. 14). 248 pp. Ill. Dan. Kr. 25.00.

Niels Stensen or, latinized, Nicolaus Stenonis (1638-86), the Danish anatomist and scientist, is one of the outstanding figures in the 17th-century history of natural science. His name is associated with the discovery of the duct of Steno (ductus parotideus), which he discovered when a 22-year-old undergraduate; but this discovery only marked the beginning of thorough and basic studies of the glands and their secretion, during which he showed, among others, that tears are secreted by the lachrymal glands and not by the brain, as supposed by his contemporaries. Another large-scale series of investigations comprised the muscles; he described the structure of the muscle and its contractions, refuting the still current Galenic dogma that the tendon is the prime instrument of bodily movement.

In addition to these he made a number of other observations, of which it shall only be mentioned that he discovered the Graafian follicles before de Graaf, and Peyer's patches before Peyer, and that he gave the first description of the anomalies accompanying the congenital diseases now known as Fallot's tetralogy.

His studies of the heart also enabled him clearly to demonstrate that the heart is a muscle and nothing but a muscle; he repudiated Harvey's assertion that the heart was also the place of origin of the blood and the seat of the innate heat and the vital spirits.

Stensen's contributions to anatomy would have been fully sufficient to preserve his name for posterity. Important as they were, it was in a different domain that he made his greatest discoveries, being the founder of modern mineralogy, geology, and palaeontology. He was the first to point out the true origin of fossil animals; a pioneer in palaeontology, he framed, as emphasized by Professor R. Spärck, the principles on which Lamarck's and Darwin's theory of evolution, and thus the entire structure of modern biology, is based.

The story of Stensen's life does not follow conventional paths. Born in Copenhagen he was trained in medicine by Thomas Bartholin at the University of Copenhagen, but spent the greater part of his life abroad. His great anatomical investigations he made in Holland, his geological studies in Tuscany where, in 1667, he was converted to the Roman Catholic faith. In 1672 he was called home by the Danish king and appointed *anatomicus regius* in Copenhagen, for owing to his conversion he could not obtain a chair at the Protestant university of his home city. In 1674 he returned to Florence and took holy orders the next year; in 1677 he was made a bishop and acted as vicar-apostolic of North Germany and Scandinavia. He died at Schwerin at the early age of 48.

Stensen's scientific works, *Opera philosophica*, were edited in 1910 by Vilhelm Maar, who wrote an introduction describing his life and scientific work.

Since then much fresh source material has been brought to light, almost solely through the untiring research work of Dr. Scherz. In 1941-47 the latter, in conjunction with Knud Larsen, edited Stensen's *Opera theologica*, and in 1952 Scherz, single-handed, brought out *Nicolai Stenonis Epistolae et Epistolae ad eum datae*. Stensen's *Epistolae* take up two large folios containing letters collected from

archives in Denmark, Holland, France, Germany, and Italy. This collection of material represents a gigantic work for which the editor deserves the highest praise. In addition to the letters, Dr. Scherz has been fortunate in finding two hitherto unrecorded Stensen manuscripts. One is the so-called Chaos MS, written in Stensen's own hand. It contains a good many notes from his years of study in Copenhagen, about which no information has existed until now. The other is the so-called Indice MS, an inventory of Stensen's collection of fossils, minerals, crystals etc., describing more than 300 such specimens which evidently formed the basis of his pioneer geological work.

The book under review, *Vom Wege Niels Stensens*, which won for its writer the degree of Ph. D., falls into two parts. Part I contains Stensen's biography, and through his knowledge of the Chaos MS and the numerous letters the author has been able to supplement the earlier biographies and correct old mistakes. Part II comprises the Indice MS, published here for the first time. Dr. Scherz presents the original text in Italian and a German translation, and the foot-notes represent a great amount of work in the determination of the various minerals.

While this latter section is of special interest to geologists, the biography is of prime importance to all interested in the history of science. This is not the last of Scherz's Stensen studies; a new work written in English, is in course of preparation.

EDV. GOTFREDSEN

ACHILLE MONTI. *Antonio Scarpa in Scientific History and His Role in the Fortunes of the University of Pavia.* Translation by Frank L. Loria. New York: The Vigo Press, 1957. 125 pp. Ill. $4.50.

Antonio Scarpa was born in 1752 in the province of Treviso, the son of a Venetian boatman. At the age of fifteen he entered the University of Padua as a medical student where he became the favorite pupil and confidant of the illustrious Morgagni whose unequalled gift for careful observation did not fail to leave its imprint on the young and zealous Scarpa. It was through Morgagni that Scarpa was appointed to the first chair of anatomy and clinical surgery at the University of Modena in 1772. In an effort to broaden his own experience, Scarpa in his third decade undertook a series of travels to the important medical centers of Europe. In Paris he encountered Vicq d'Azyr, and in London, Pott, both of whom befriended him. While in London he came to know the Hunter brothers and was greatly intrigued by William Hunter's anatomical museum. It was undoubtedly here that Scarpa derived the inspiration for his own superb collection of specimens that was to become the pride of the University of Pavia. In 1783 Scarpa assumed the duties of the first chair of anatomy at Pavia and, except for a lecture tour through Austria and Germany made jointly with Volta, he thereafter turned his energies to the medical school which he ruled with an iron hand until his death in 1832.

The study of anatomy at Pavia was without question immeasurably advanced during the years of Scarpa's tenure. He discontinued the established system of lectures and in their place instituted systematic anatomical demonstrations which

later were held in the new amphitheatre erected at his insistence. He decreed that post mortems be regularly done on all patients who died in the hospital.

Except through the eponyms which bear his name, the contributions of Scarpa to surgical anatomy, physiology, and pathology are not generally appreciated in this country. His discovery of the labyrinth and semicircular canals, as well as his brilliantly executed wax models of the inner ear, are a tribute to his penchant for detail and meticulous observation. He identified the nasopalative nerves and the sympathetic nerve supply of the heart. He was the first to describe the sliding hernia, and his two treatises on hernia and aneurysms are masterpieces of surgical pathology.

These achievements are marred, however, by certain odious aspects of Scarpa's personality, which, after his death, served to diminish his reputation, and which, in many instances earned him as much personal hatred and animosity as they did prestige. He was a true martinet imbued with a willfulness and self-confidence which exceeded the bounds of modesty. His criticism of his colleagues, whether justified or not, was unmerciful. Nor was he above such scandalous intrigues as his futile attempt to discredit Spallanzani by accusing him falsely of stealing certain items from the University's museum of pathology. Here is fertile ground indeed for those who would equate genius with eccentricity.

For anyone not having access to the original in Italian, Dr. Loria's translation of this monograph by Achille Monti will be a welcome contribution. We would wish, however, that the translation had been less literal. The preservation in English translation of Italian sentence structure often results in a rather stilted prose. A freer rendering would have been more pleasing. The illustrations are excellent, but the cover of this monograph is of poor quality and unworthy of its contents.

EDWARD D. COPPOLA

GUNTER MANN. *Die medizinischen Lesegesellschaften in Deutschland.* Köln: Greven Verlag, 1956. (Arbeiten aus dem Bibliothekar-Lehrinstitut des Landes Nordrhein-Westfalen, Heft 11). 120 pp. Ill. D. M. 9.80.

The ever-present problem of keeping abreast of current medical thought was tackled with amazing enterprise by the German physicians of the Enlightenment and of the subsequent scientific era. The point of demarcation between these two periods is placed in the present volume at 1830, though later developments are quite rightly traced in many instances to beginnings before that date. Likewise, the geographical term of the title is to be taken in a wide sense, since data from Switzerland and the Austro-Hungarian empire are included.

The creation of private reading and discussion clubs of an informal nature met some of the social and professional needs of the participants, but served also to keep them aware of their need to share in the constantly widening knowledge of their art. Circulating libraries of books and periodicals were organized and maintained, and elaborate systems set up for the dispatch of the material on loan and for the payment of dues and fines. Communal professional libraries were instituted, and, notably in Göttingen, reading rooms for medical students. The

Stralsund circle, founded in 1773 and arising out of the botanical excursions of 6 doctors and apothecaries, gradually acquired a library in the home of a member who could house and take care of it, new books and periodicals being acquired with the approval of his colleagues. Dues gradually increased, property rights were legalised, a treasurership instituted. The growing library presented problems, and finally in 1864 the Society decided to put it under the custodianship of the town hospital, pledging future contributions of books and journals in return. The collection remained the property of the Society, and provision was made for a private reading room. But the reallocation of the library appears to have been the climax in the history of the Stralsund circle, for a gradual decline in the usefulness of such an institution seems to have coincided with the necessity to relinquish a measure of control. There was still some circulation of journals after World War I, but the Society as such was dissolved in 1920, after 147 years. In 1939, much of the collection was finally taken over by the Institute for the History of Medicine of the University of Berlin, rescued from the attic of the Stralsund Town Hall.

The present volume contains a number of charts and illustrations—portraits of important figures in the development of medical societies, facsimile reproductions of membership lists, circulation tables, etc.—and is full of detailed factual data. Indeed, in the opinion of this reviewer, the desire to present as much information as could be garnered has served also to weigh down the really exciting story which the author might have told, and of which one gains glimpses only, as, for instance, in the dramatic development of the Stralsund circle.

C. Lilian Temkin

George Haines, IV. *German Influence Upon English Education and Science, 1800-1866.* New London, Conn.: Connecticut College, 1957. xii + 106 pp. $3.50.

This small book endeavors to study "the reception in England of the German influence among scientists and educators." The basic point that the author is trying to make is that England and the English failed to give proper recognition to the growing importance of science and technology, that is in the training of prospective scientists and technicians, and on the other hand the Germans did give proper recognition to this important question. From this point the author goes on to point out that "what was certainly one of the sources of English weakness" was at the same time what enabled Germany to challenge so seriously what was "the greatest power and wealthiest society in the world." There is much truth in this statement.

There are many quarrels which this reviewer would like to take up with the author. Perhaps the most serious flaw in the work is that throughout the author makes the automatic assumption that the German position was correct and that the English view was incorrect. Perhaps one of the greatest problems facing a free nation involves the relationship of various fields of endeavor to the government. The author believes that "the English did not by any system of institutions either encourage or compel every man or woman to develop his capacities to the utmost, because they were very late in encouraging advanced study in most subjects, and because they did not grasp the significance of the application of scientific theory

to industrial and other processes, they failed to produce many technologists, and the elaborations and applications of many of their original discoveries were for the most part done by others. . . . For viewed socially, the function of educational institutions in the modern world is literally to *compel* [reviewer's italics] every youthful member of a society to make the very most that can be made of such ability as he or she possesses." The word "compel" makes the reviewer disagree with Professor Haines. If one desires to ask the abstract question what would have been the best system for England regardless of other considerations, perhaps such compulsion would have been desirable. But we must work at all times in historical context, and if that be the case, such a statement shows a great misunderstanding of what basic differences there were between British and continental institutions. The English were the prime example of people who rightfully took great pride in their political instiutions and their long history; in a real sense the Englishman had long been concerned with the development of ordered liberty. It was this above all that he valued. In the 1830's and 1840's there was a gradual extension of this liberty in many fields through reforms enacted by the legislature. To ask the English people at that moment to compromise this liberty for efficiency and compulsion is to ask the impossible. To assume that the State should take such control shocked many Englishmen. As the Reverend William Whewell put it: "To 'obtain a direct national provision for men of science' is . . . to get pensions from the government for our friends: a worshipful employment truly!" A speaker at the 1840 meeting of the British Association said: ". . . and while on the one hand science has not hesitated to demand of the country all that was requisite to give completeness to a great design, so on the other, the Government of the country has not hesitated to yield, with a liberal and unsparing hand, every request the importance of which was so well guaranteed." Perhaps the most typical attitude of the 1840's can be found expressed in a *Dublin Review* article: "the state of science with respect to the government may, at present, be described as follows: there seems to be no particular disposition to promote it, but no unwillingness to do so, when it can be done without trouble."

To continue an analysis of Professor Haines quotation: to say that the English did not grasp the significance of the application of scientific theory to industrial and other processes is just not the case, that is, if one turns to the various literary and scientific journals and memoirs of the period. The reviewer does not wish to belabor this question too far, but it is obvious that another weakness of this book is that the author has not gone to many of the basic sources of the period. It is an unusual experience to read this work and realize that the bountiful materials which lay at hand for examination have been so neglected. If the author did not feel it worthwhile to refer to the sources themselves, he shows a more shocking lack of familiarity with some of the recently published materials on this period in various scholarly journals.

In all fairness to Professor Haines, he does mention that the English attitude towards institutions developed differently from that of Germany and he recognizes the reasons for such an unwillingness to change; but at the same time he then obviously thinks that the German system was superior. Of course he has every right and much proof to think so. But his prejudice is a little too obvious; for example, in referring to the Great Exhibition of 1851 he refers to Henry Cole's

"naive innocence of faith in the all-sufficient virtues of competition and utility," but at the same time speaks of the Prince Consort's "combination of idealistic hope and perceptive realism." The Prince Consort of course represented the German influence; he was a man much to be admired, a person who had difficulty in being accepted in England. It is merely an opinion, not a fact, but the reviewer would disagree with Professor Haines when he speaks of Albert's being "a well-educated youth," for if careful study is made of his formal education he really appears to be more of a dilettante than anything else.

Occasionally one feels that the author is attempting to point out that the Anglican Church was more than hostile to science; and then he proceeds to point out the non-Conformist origin of many scientists. No one would argue with this latter point, but was this because there was something within Anglican doctrine that made this so, or because of the monopoly that the Church possessed in education? It is undoubtedly the latter, and when the Church monopoly was gradually broken, as other monopolies in English life were broken in the nineteenth century, this situation would improve. That is the true significance of the reforming zeal of the century; rather than have the State impose reforms from above, the people via parliament did just that. And on a pragmatic basis, the English have been able, with the industrial aid of the United States of America to fend off German attempts to dominate Europe. Democracy is an expensive luxury; surely one could not want to transfer his faith to efficiency which in its turn might destroy that democracy. I am sure that Professor Haines wants this no more than any one else, but it sounds like it when he says: "if many of our young people find little encouragement, not to say compulsion, to submit to long years of disciplined study, they may become pensioners, living on inherited capital, and our own personnel efficiency may rapidly decline. To permit this to occur will be as perilous for us as something similar was for England. For us, that is the moral of this brief study." Surely the "compulsion" and "efficiency" which the author admires had a most unfortunate effect in other fields of endeavour in Germany than science in the nineteenth century, for such compulsion and efficiency certainly helped produce Bismarck, and more disastrously, unwittingly played into the hands of Adolf Hitler.

The author has diligently compiled a chart of representative groups of scientists in England between 1800-1866, showing nationality, educational background, and principal appointments. Although it is of some interest, the energy which this must have involved can not be justified by the result. One factual error which should be pointed out: on page 17 the author refers to the British Institution; it is to be assumed that he means the Royal Institution, an institution which gets no further mention than to be given the wrong name; a rather amazing omission, it might be added.

GEORGE A. FOOTE

THOMAS NEVILLE BONNER. *Medicine in Chicago, 1850-1950,* A Chapter in the Social and Scientific Development of a City. Madison, Wisconsin: The American History Research Center, 1957. xvii + 302 pp. Ill. $5.00.

Provided with a fellowship by the Chicago Medical Society during 1949-50, Bonner has achieved a splendid study of the history of medicine in Chicago. The book inter-relates Chicago's cultural history with its scientific attainments, emphasizing the social and economic pressures on medicine. The achievements of men like Daniel Brainard, N. S. Davis, John Evans, John Rauch, and Christian Fenger are accurately portrayed. The rise of Rush Medical School as one of the great schools of America, the growth of the Chicago Medical College and its ultimate absorption into Northwestern University, the appearance of the University of Chicago Medical School and its increasing emphasis on research, the birth of the College of Physicians and Surgeons and its union with the University of Illinois, and the evolution of Loyola and the Chicago Medical Schools explain the growing role of Chicago as a great centre of medicine. Mercy and Cook County Hospitals played the leading role in early Chicago, to be followed by Presbyterian, Michael Reese, and Wesley. The founding of the McCormick Institute for Infectious Disease in 1902 was Chicago's first answer to the need of a research institution. The local medical societies elevated standards of practice and ethics through the Illinois and Chicago Medical Society. The Institute of Medicine excelled in its scientific contributions to the welfare of the community, and the Chicago Pathologic Society reached especially high attainments. Under the public health officers John Rauch, Oscar de Wolf, William A. Evans, and Herman Bundesen, cholera, typhoid, diphtheria, and venereal diseases were brought under control. Chicago became the publishing centre of the *Chicago Medical Journal and Examiner,* the *North American Practitioner,* the *Journal of the American Medical Association,* and *Surgery, Gynecology and Obstetrics.* The John Crerar Library grew into a leading storehouse of scientific knowledge.

Chicago became the home of the American College of Surgeons, the International College of Surgeons, the American Medical Association, and the American Association of Industrial Physicians and Surgeons.

The book is valuable because it depicts the growth typical of most American cities. It is well organized and frankly recorded. It is written in a pleasing style, and as a book for reference and instructive reading compares favorably with Zeuch and also Davis' History of Medical Practice in Illinois. Its bibliography is admirable. Its integrated character gives it special merit.

FREDERICK STENN

DONALD R. MCNEIL. *The Fight for Fluoridation.* New York: Oxford University Press, 1957. xii + 241 pp. $5.00.

In *The Fight for Fluoridation* Donald R. McNeil has written the story of what man has done in the last fifty years about a physical disability with which man has lived for thousands of years. It is an account written from the point of view of neither the biologic nor the social scientist, but from that of the reporter.

McNeil tells the story of investigation and discovery of the significant role of fluorides in the development of mottled teeth. A by-product of this research, the observation of the relatively few carious lesions in mottled teeth, led to a search for the "minimal threshold of fluorine." The establishment of the amount of fluorine needed to reduce dental caries, without producing mottling or other undesirable results, initiated the struggle over the public health measure, the fluoridation of drinking water. McNeil reports what happened in each of several towns before fluoridation was rejected or accepted.

McNeil elucidates to the point of repetition, the roles of the institutions and individuals participating in the struggle—researchers in the project, men of science not working in the same field but expressing opinions, individual dentists and physicians, governmental agencies, professional organizations, educational institutions, special groups, politicians, the press, and the public. If McNeil shows any personal bias, the men of action who refused to wait until the findings from towns experimenting in fluoridated water were complete, have a slight edge. Fortunately, subsequent research and experience support their action.

Although McNeil's book does not pretend to be other than a series of well documented events, the narrative is one that will interest sociologists and political scientists as well as historians, because the story vivifies many of the questions arising in American democracy.

The book should be read by the lay public, both the apathetic and the emotional. Perhaps the information McNeil supplies concerning some of the anti-groups and their leaders will shock the public into giving more consideration to the findings now accepted as factual by those best qualified to judge the issue—the health professions.

NELL SNOW TALBOT

CAMILLE DREYFUS: *Some Milestones in the History of Hematology.* New York and London: Grune and Stratton, Inc., 1957. vii + 87 pp. Ill. $4.50.

In five essays Dr. Dreyfus presents select background and modern highlights in the development of European hematology. The thread of hematologic knowledge is pursued through the writings of ancient physicians, Biblical lore, and medieval discourses to the medical literature of the nineteenth and early twentieth century. Emphasis is placed on the contributions of French hematologists, and the emergence of hematology as we know it today, a science that crosses strict disciplinary lines, is traced through Gabriel Andral, Alfred Donné and Georges Hayem. The nineteenth century conflict of dogmatic theory with emergent pathology and physiology is highlighted for hematology in the clash of Andral and Broussais, Donné stands

out as an early champion of visual education by microscopy while the final essay depicts Hayem dramatically, at the summit of hematology as it matured in his own life's work. Three illuminating essays on clinical and laboratory observations leading to the definition of chronic hemolytic anemia, leukemia, and polycythemia vera reveal the author's appreciation of the resistance to change encountered by those pioneering hematologists of France and Germany who elucidated distinctive blood dyscrasias against vehement opposition.

Four of the essays in this volume have appeared at an earlier time in the periodical literature of the United States. The title indicates properly that this is not a comprehensive history of hematology, but the book may be read with pleasure and reward by any one who has found himself intrigued by the mysteries of that vital fluid, blood.

One criticism is necessary, though not to detract from the interest and value of the essays. The volume suffers from extremely careless typesetting, many letters are transposed and often letters are omitted from key words. The book and its author deserved better attention in the press.

ROBERT J. FAULCONER

SIR CHARLES DODDS *Biochemical Contributions to Endocrinology*: Experiments in Hormonal Research. Stanford, California: Stanford University Press (London: Oxford University Press), 1957. 76 pp. Ill. $3.00.

This book contains the Lane Medical Lectures of 1956 given by Sir Charles Dodds at the Medical School of Stanford University. In his introduction, Dr. Dodds points out that the great handicaps of the earlier physicians were their lack of useful drugs. For example, the treatment of pneumonia from the sixteenth to the nineteenth centuries consisted of blistering, bleeding, scarification, dry-cupping, and enemas. The interesting comment is made that there was a perfect series of controls for this type of treatment in the eighteenth and nineteenth centuries on account of the rise of homeopathy, the doctrine of Hahnemann. The fact that the patients of Hahnemann, in many cases, did better than those treated by the members of the College of Physicians demonstrated that some of the acute diseases might get well of themselves. The heroic measures used by the physician of that day were more harmful than beneficial. The author states that the whole picture was changed by Pasteur's demonstration of the microbial origin of disease and by the introduction of chemotherapy by Ehrlich.

The remainder of the book is concerned with the development of synthetic compounds having estrogenic activity, the relationship of their chemical structure to biological activity, their clinical use and possible agricultural applications. The final chapter describes the discovery of aldosterone. A fairly complete list of references is given. There is no index. It is valuable to have in printed form a series of lectures given by this outstanding contributor to medical research.

CHALMERS L. GEMMILL

THE BULLETIN RECENTLY RECEIVED*

Erwin H. Ackernecht. *Kurze Geschichte der Psychiatrie.* Stuttgart: Ferdinand Enke Verlag, 1957. xii + 99 pp. DM 12.

Władysław Biegański. *Myśli i aforyzmy o etyce lekarskiej.* Wydanie IV, przedmowa poprzedził Bolesław Skarżyński. Warszawa: Państwowy Zakład Wydawnictw Lekarskich, 1957. 164 pp. Ill. zł 22.00.

Brompton Hospital Reports. Vol. 25, 1956. London: Lloyd-Luke (Medical Books) Ltd., 1956. viii + 312 pp. Ill. 15 shillings.

Föreningen Medicinhistoriska Museets Vänner, *Årsskrift 1957.* Yearbook of the Association, The Friends of the Medical-Historical Museum Stockholm (With short summaries in English). Stockholm, 1957. 212 pp. Ill.

M. D. Grmek. Povijest medicine rada. Zagreb: Jugoslavenska Akademija Znanosti i Umjetnosti, 1957. Reprinted from *Arhiv za higijenu rada i toksikologiju,* vol. 8, 1957, pp. 128-165.

K. D. Keele. *Anatomies of Pain.* Springfield, Illinois: Charles C Thomas, 1957. x + 206 pp. Ill. $5.50.

Michael S. Koch. *Gamble-Curran Medical History Collection—A Classified Bibliography.* State University of New York Downstate Medical Center Library, Brooklyn 3, N. Y., July, 1957. ii + 46 pp. [Copies may be secured from the Library by written request.]

Linnaeus Commemorated 1707—May 23rd—1957. Addresses delivered at the Academic Session on the 23rd of May, 1957, in the Ridderzaal of the Town Hall, Haarlem. Communication No. 103 from the National Museum for the History of Science, Leyden, 1957. 36 pp. Ill.

Medical Department, United States Army. *Surgery in World War II: Ophthalmology and Otolarnygology.* Ed. M. Elliott Randolph and Norton Canfield. Washington, D. C.: Office of the Surgeon General, Department of the Army, 1957. xxiii + 605 pp. Ill. $5.00. [For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.]

Charles Newman. *The Evolution of Medical Education in the Nineteenth Century.* London, New York, Toronto: Oxford University Press, 1957. x + 340 pp. $4.80.

Pharmacy Through Four Centuries. Guide to an Exhibit Commemorating the 75th Anniversary of the School of Pharmacy, University of Wisconsin, prepared by Glenn Sonnedecker, School of Pharmacy, and Samuel A. Ives, University Library, at the University of Wisconsin Library, Rare Book Dept. October through December, 1957. Ill.

G. Canby Robinson. *Adventures in Medical Education,* A Personal Narrative of the Great Advance of American Medicine. Cambridge, Massachusetts: Published for The Commonwealth Fund by Harvard University Press, 1957. xii + 338 pp. Ill. $5.00.

Berton Roueché. *The Incurable Wound,* and Further Narratives of Medical Detection. Boston, Toronto: Little, Brown and Company, 1958. 177 pp. $3.50.

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* The *Bulletin* reserves freedom of decision as to the publications to be listed in this section. Items received, other than those assigned for review, are ultimately incorporated into the collection of the Institute of the History of Medicine.

CONTRIBUTORS TO THIS NUMBER

ERWIN H. ACKERKNECHT, M. D., is Director of the Institute of the History of Medicine at the University of Zurich and Professor of the History of Medicine at that university. His address is Medizinhistorisches Institut, Universität Zürich, Zürich, Switzerland.

EDWARD D. COPPOLA, M. D., is now Chief, Surgical Service, 2795th USAF Hospital, Warner Robins, Ga.

ROBERT J. FAULCONER, M. D., is Pathologist at DePaul Hospital, Norfolk 5, Va.

GEORGE A. FOOTE, Ph. D., is Assistant Professor of History at Goucher College, Towson, Maryland. His address is 3943 Cloverhill Road, Baltimore 18, Md.

BRUNO GEBHARD, M. D., is Director of the Cleveland Health Museum.

CHALMERS L. GEMMILL, M. D., is Professor of Pharmacology, School of Medicine, University of Virginia, Charlottesville, Va.

EDVARD GOTFREDSEN, M. D., is Professor of the History of Medicine at the University of Copenhagen. His address is Københavns Universitets Medicinsk Historiske Museum, Bredgade 62, København K, Denmark.

C. A. HUTCHINSON, Ph. D., is Associate Professor of History in the Corcoran Department of History, Cabell Hall, University of Virginia, Charlottesville, Va.

PAUL KLEMPERER, M. D., is Visiting Professor of Pathology, Albert Einstein College of Medicine, New York. His address is Mount Sinai Hospital, Fifth Avenue and 100th Street, New York 29, N. Y.

JOSHUA O. LEIBOWITZ, M. D., is a specialist in internal medicine and Lecturer on the History of Medicine at Hebrew University in Jerusalem. His address is Solel Boneh St. 7, Katamon-Jerusalem, Israel.

VICTOR A. MCKUSICK, M. D., is Associate Professor of Medicine, The Johns Hopkins University, School of Medicine, Baltimore 5, Md.

HELEN R. PURTLE is Exhibits Specialist, Medical Museum, Armed Forces Institute of Pathology, Washington, D. C.

FRED B. ROGERS, M. D., is Associate Professor of Preventive Medicine and Public Health, Temple University School of Medicine, Philadelphia 40, Pa.

FREDERICK STENN, M. D., is Assistant Professor of Medicine at Northwestern University Medical School. His address is 6400 South Kedzie Avenue, Chicago 29, Ill.

NELL SNOW TALBOT is Professor Emerita of Medical and Dental History at the University of Illinois College of Dentistry. Her address is 2700 Broadway Avenue, Evanston, Ill.

LYNN THORNDIKE, Ph. D., is Professor Emeritus of History, Columbia University, and resides at 4 West 43rd St., New York 36, N. Y.

ILZA VEITH, Ph. D., is Associate Professor in the History of Medicine, University of Chicago, Chicago 37, Ill.